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What.
constitutes
an
inspector?

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• ❁ PREFACE ❁ •



The necessity for a work which would, with approximate correctness, describe the various grades of lumber, as made in the distributing yards of the country, has long been felt, but has never been undertaken, for many reasons apparent to the practical lumberman.

One of the most potent of these reasons has been in the lack of uniformity between different markets; a factor which has its existence in consequence of the lack of a standard. The object of this work is to supply a standard; and, as the Chicago market is not only the largest in the world, but was the first to inaugurate the prevailing custom of extended grading, it is manifestly proper that its system should be adopted as the basic rule.

The work has been undertaken by one who has had a life experience as a lumber inspector, and is a recognized authority upon all matters connected with the manufacture and sale of lumber. In its preparation the yards of Chicago have been thoroughly canvassed, and the lumber actually examined, to an extent which must insure a *fair average* of the grades described, as made by those claiming neither the "best" grades, on the one hand, or having reputation for making "low" grades on the other.

After publication, covering a period of several months, in the columns of the LUMBER TRADE JOURNAL, in connection with a request for candid criticism, which the author has been highly gratified to find of an unusually complimentary nature; the work is now given to the world, with full confidence that it will be generally adopted as a reliable guide for general uniformity in grading customs.

THE AUTHOR.

CHICAGO, July 1, 1888.

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CHICAGO YARD GRADING.

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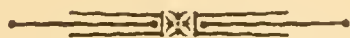
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WHAT · CONSTITUTES · AN INSPECTOR.



Much discussion is indulged in regarding inspection, and its generally unsatisfactory character. From the first inception of the lumber trade a difficulty has prevailed in the matter of bringing the judgment of the buyer to agree with that of the seller of lumber, as to its value. In the early history of the business it was customary to sell the entire product of the log *en masse*, but presently it was found that one portion was better adapted to certain uses, and of more value in that use, and the separation into qualities ensued. Differences of judgment now became apparent, and an appeal to arbitration in the selection of an unbiased man skilled in working up lumber, and consequently supposed to be competent to judge of its adaptability to certain uses—was resorted to, until “viewing,” “surveying” or “inspection” of lumber became a distinct occupation. For many years it was thought necessary that the “surveyor” should be a graduate of the carpenter’s bench, but as the trade increased in volume, the surveyor’s son or other assistant, who had served an apprenticeship as “tally boy,” and thus obtained an insight into the principles governing the judgment of his father or employer, and who was occasionally permitted to handle the “rule” and “spell,” his chief, albeit always under his eye, became sufficiently proficient to undertake the business for himself, until at the present time it is difficult to find an inspector of lumber who has any practical knowledge of the tools with which, or the uses to which, lumber is to be worked or put. But the underlying qualifications of an inspector are the ability to judge of the adaptability of a piece of lumber to a certain use, and of the effect upon that adaptability of certain defects in the board or plank under consideration. What then is an

“inspector”? He is a judge, an arbitrator, one called to decide between two parties, saying to one how much he ought to receive, and to the other how much he ought to pay for the lumber which he has been called upon to “view,” “survey” or “inspect.” In connection with lumber the two former terms are now obsolete, and the latter alone is used. What are the qualifications of an inspector? First and foremost, honesty; second and no less important, common sense. If he is not honest, the possession of common sense is an incentive to rascality, and there is nothing in the realm of business transactions, which presents a broader opportunity for testing a man’s integrity than lumber inspection. Given honesty and common sense, an inspector should be one who is expert in judging the relative value of one piece of lumber to another from what may be called two basic or ideal standpoints—the first a perfect piece of lumber, one free from sap, rot, knot, shake, worm hole, check, stain or other defect; the second a piece of lumber with sound knots of small size, but without other defect. The first is designated “clear,” the second “common.” With these two ideals in mind a skillful inspector examines a piece of lumber with a view of deciding to what extent its defects affect its value in comparison with the basic standards. He finds a custom which divides the first standard into several subdivisions; his duty is to decide between the two parties into which of these subdivisions each piece should be classified. So also with the second division, he is to determine the relative value of each piece as compared with a standard piece of common. In this determination common sense must be exercised to no small degree. All boards are not alike, in fact no two are alike, and now comes in the exercise of sound judgment to determine fairly the relative value of one board to another. This demands a knowledge of lumber and the uses to which it is to be put, and no so-called inspector is entitled to the appellation, unless from an intimate acquaintance with timber, and the uses to which it is adapted, he can exercise an honest common sense in its classification. How then shall both buyer and seller be protected in their rights, or know that judgment has been passed upon the lumber by a competent man? Only through a system by which those claiming to be competent can be certified as to that competency by an organized and authorized committee composed of men whose training and experience in handling lumber have fitted them

to pass judgment upon the competency of the would-be inspector. Such a committee will, in every large market, find inspectors who are first class in their judgment of pine, but who do not understand the first rudiments of hardwood inspection. They will find men who are experts in their judgment of oak, but who are utterly incompetent to pass judgment upon walnut or other varieties of hardwood. Such men should be certified and licensed according to the rules of common sense, viz.: For such varieties and such only as they prove their ability to properly pass judgment upon. Indiscriminate license to, or toleration of, all who are wise in their own conceits, but incompetent to deal fairly as arbitrators between the man who sells and the man who buys, is the curse of the lumber trade of to-day, an evil which all honest dealers in every lumber market of the country should feel a personal interest in overcoming, or, failing to exercise that interest, become as culpable as those who through ignorance or dishonest intent, work damage to either party to the transaction. An inspector who possesses the needful qualifications of judgment and honesty should be a man of stamina. He should resent any attempt on the part of buyer or seller to warp his judgment. Having received his instructions in the interest of both parties, if there is any special agreement, as is often the case, he is to be unbiased by the presence or the protest of either, and be guided only by his own individual judgment. In a wholesale market he is to form his judgment wholly upon the board as it lays before him. He has no right to say, "This would be a clear if the manufacturer at the mill had done so and so, therefore I will throw off so many feet and call it clear." His duty is to judge of the board *as it is*, not as it ought to have been. And here comes in his *best judgment*, as he determines what is the grade of the board, considering its defects. He is not to say: "Oh, the dealer can manufacture and remedy these defects." If the dealer can do so it is at the expense of time and labor which are money, and he should have a compensation therefor. The inspector on the other hand is not to over-estimate defects, and thus work damage to the seller. When lumber is sawed for specific uses the inspector will judge defects upon the basis of the effect they will have upon that use. As a general rule it may be said an inspector is to judge lumber according to the surroundings. If it is to go into a general yard he must have in mind the requirements of yard stock,

if direct from the manufacturer to a consumer he may make allowance for the uses to which it is to be devoted, which he could not make if going into a yard where the dealer takes his chances of selling to the party who can handle it to the best advantage. If an inspector was judging plank for a road he would not be justified in judging as closely as if it were going into general stock. Knots or other defects which would depreciate in general value, would be no injury to the piece as a road plank. These illustrations serve as examples of the fact that judgment is to be used according to existing circumstances as no cast-iron rule can be laid down for an inspector's guidance.

Inspection must not be confounded with Yard Grading, for while the former applies more especially to the wholesale, the latter applies exclusively to the retail trade. Akin to each other, the rules applicable to grading, are far more elastic than those which apply to inspection, and defects which in the latter would condemn, are permissible in the former. Inspection varies, but has a far more solid basis on which judgment may be formed, than is requisite in grading and the closer the lumber comes to the actual consumer, the more may certain defects be ignored, in proportion to the certainty of the use to which the lumber is to be applied, and its adaptability to the use for which it is required. So while the *inspector* is required to distinguish but from three to five selections of quality, the *grader* must subdivide into an almost unlimited number, according to the demands of a local market, and the adaptability of a piece of lumber to satisfy such demand in its individuality, rather than its generality. To be a good inspector requires knowledge, to be a good grader requires practice, the faculty of *imitation*, more than mathematics yet the more intelligent the judgment, the more practical and uniform will be the grading.



CHICAGO GRADING.

We have of late received so many letters asking for present customs of Chicago yard grading, and realizing that in ten years' time so many modifications of then existing customs have taken place that the system then prevailing has been subject to many changes, we have been moved to undertake the compilation at this time of what we believe to be as near the custom of this market in the selection of lumber as it is possible to write it.

Our readers will at once agree with us that it is impossible to collate a description of yard grades which will harmonize with the practice of every lumber dealer. No two men see a board in the same light, and to a great extent no two will grade exactly alike. Two sorters upon the same yard will differ oftentimes upon the classification of an individual piece. General rules may be written, however, which will be the basis upon which all graders can unite, and the descriptions herein given we believe will be recognized as being of that character. In treating upon the subject we propose to take the Chicago Price List section by section, in the endeavor to give a reasonably clear and detailed statement of each item on the list. That our views will in some measure be subject to criticism we have no doubt, and we invite such honest criticisms as will enable us to revise and finally present, perchance, in future editions of this work, a complete symmetrical and generally accepted description of the different grades, such as will lead to uniformity of practice in all jobbing and wholesale yards throughout the country. Retaining the present price quotations, proportionate values will be the better indicated, but these are not to be taken in any other light than as illustrative, being liable to frequent change.

CHICAGO LIST, SECTION I. THICK CLEARS AND SELECTS.

Mixed Lengths.—Dry.

	ROUGH.
1st and 2d Clear, 2 in.....	\$ 47 00
“ “ “ “ 1¼ and 1½ in.....	46 00
3d Clear, 1¼, 1½.... \$42 00 2 in.....	44 00
A, Select, 1¼, 1½.....	38 00
A, Select, 2 in.....	40 00
B, Select, 1¼, 1½.... \$31 00 2 in.....	32 00
2x4 Clear and Select, together.....	27 00
2x4 B, Select.....	20 00
2x6 Clear and Select.....	34 00
2x8 “ “ “.....	36 00

ONE INCH FINISHING.

Mixed Lengths.—Dry.

ROUGH.

1st and 2d Clear.....	\$ 46 00
3d Clear.....	41 00
A, Select, 9 in. up.....	35 00
Thin, Clear and Select, 9 in. and upward.....	25 00
7@8 in. A@clear, Base.....	35 00
7@8 in. B, Base.....	31 00
B, Select.....	27 00

All one length \$1 extra.

Strictly speaking, first clear is not known in Chicago grades, firsts and seconds being combined in one grade.

First clear needs but little description. It is a piece of lumber nearly or quite free from imperfections. Standard lengths in even feet of 12-foot long and upward have always been insisted upon. Of late, however, short lumber is to an increasing extent being graded in qualities, and to this the rules for grading long lumber are equally applicable with modifications suitable to conditions of length and width. As a rule, however, "shorts" are sold "on sight" rather than on grade.

First clear should be not less than 10 inches wide in mixed width piles. In this grade perfection or something approaching that standard is looked for. A narrow sap if seasoned bright is not considered a defect. The term "narrow" is a question of proportions. Two inches of bright sap on one edge of one side of a 2-inch plank 14 inches wide would not take the piece out of first clear but the same width of sap in a 12-inch wide 1-inch board would at least make it a liner between seconds and thirds if it did not throw it into the thirds. As widths and thickness increase, a larger portion of defects are allowable. And here is where good judgment and nice discrimination are required on the part of the grader. No two boards or planks are alike. As the eye strikes a piece of lumber which is not absolutely perfect, the involuntary question formulates in his mind, "What is the effect of that knot or that sap upon the use and value of the piece, as compared with a perfect piece of the same size?" This leads to an analysis of the blemish, as to its size and its location. If a knot, is it sound, and is it located so as to cause no waste in uses for which the piece, if perfect, would be adapted. If sap, is it bright, free from discoloration (which is incipient decay), is it narrow in proportion to the width of the plank? To what extent do these defects affect the value of the piece for use when compared with a perfect piece? In determining

these questions length, width and thickness are to be considered. That which would be a blemish on a 6-inch strip 16 feet long, would be thought of small consequence in a 12-inch board of the same length, if not unfavorably located ; while defects condemning a 1x12 would be inconsiderable in a plank such as we describe below.

In examining the yards of this city in order to correctly describe their customs, we have gathered examples in the different grades, the more intelligently to elucidate the subject to our readers.

EXAMPLES OF FIRST CLEAR.

Example 1.—A 1x12-16 feet. Is free from any defect; is sound in texture, free from knots, rot, sap, shake or other blemish.

Example 2.—1x12-16 feet. Has a narrow bright sap 1 inch wide on one edge of one side; no other defect.

Example 3.—2x12-16 feet. Free from all defects, except that a knot the size of a dime shows near the center of the heart side.

Example 4.—2x16-16 feet. One perfect side; the other shows a bright sap 2 inches wide on one edge and 1 inch wide on the other.

Example 5.—3x24-16 feet. Has a perfect face. The heart side shows three small knots, and at one end is a V-shaped rot 4 inches broad, extending 6 inches to its point. (96 feet of timber allows more blemishes and of a more serious nature than can be allowed in a small piece).

SECOND CLEAR.

It is a general custom to unite firsts and seconds in one grade. A second clear is a board which *almost* reaches the standard named for first. It may have slightly increased defects, but is gauged upon the rules given above. Example No. 2 in firsts would be a second if the sap were not perfectly bright, while it must go to a much lower grade if the sap is black. Example 3 would be a second if, with the knot on the heart, there were a light sap on the outside.

Example 1.—2x12-16 feet. One clear face, except small cat face (curl), 1½ inches bright sap on one edge, and half inch bright sap on the other edge of the sap side.

Example 2.—3x22-16 feet. Heart side is perfect. A bad y edged piece, showing wormy on one edge a full inch wide, for two feet in length; also 3 inches sap slightly discolored, running out at center. The other edge has 1½ inches sap slightly discolored. (Some yards would make this a third, but 88 feet of timber in a desirable shape, covers a serious line of defects.)

Example 3.—2x14, 18 feet. Has one perfect face. Sap side shows 2 inches of bright sap on each edge, tapering from one end to nothing in the center of the length.

THIRD CLEAR.

There is greater difficulty in defining a third clear than with the firsts and seconds. In ordinary inspection it would be defined as a piece of lumber having three defects, either of knots or sap, or both if favorably located. A somewhat larger knot and wider sap will pass in this grade than is permitted in the firsts or seconds.

In pieces of less than twelve inches wide the knots should not be larger than a nickel, nor the sap over an inch in width. With increasing width and thickness larger knots to an inch in diameter, or wider sap may be allowed. The face of a third should be reasonably clear, but with a small knot on the face two narrow saps on the other side are allowable. With a clear face more sap may be passed than in a second, or if the sap side is perfect three knots may be allowed on the heart. According to the size of the piece knots as large as a half dollar may be admitted, but it would require that the piece be a handsome one otherwise, or if free from knots two or two and a half inches of sap on both edges of one side in a plank or board fourteen inches wide.

Example 1.— $1\frac{1}{4} \times 14$. Has clear face side, other side has a bright sap 2 inches wide running the full length of both edges.

Example 2.— 2×16 . On face 1 knot 1-inch diameter and a narrow sap showing on one edge. On sap side 3 inches sap slightly discolored on full length of one edge, otherwise perfect.

Example 3.— 2×13 . A 3-inch sap on both edges of one side. Heart side perfect except two or three small hard gum spots.

Example 4.— 2×16 . A cluster of three small knots within two feet of one end show through; a pin knot 6 feet from end. One-inch bright sap whole length on one edge of sap side.

Example 5.— 3×22 . Has three small knots showing through, several growth checks a few inches long not weakening the piece.

Example 6.— 2×14 . Slight sap on otherwise clear face. On sap side 3 inches of sap on each edge tapering out at 6 feet from end.

A SELECT.

A class of pieces almost equal to 3d clear, known to old inspectors as 4ths. Not entitled to go in the clear, yet adapted to many or most of uses in which clear is used.

Example 1.— 2×18 . Has 3 scattering knots on heart side showing through. On sap side a line of sap 3 inches wide on both edges.

Example 2.— 2×18 . Has 4 knots on heart side, no sap, but water streaks (not shake), on sap side.

Example 3.— $1\frac{1}{2} \times 20$. Light sap and two worm holes which show through; a large knot on one edge, not reaching to face, otherwise perfect.

Example 4.— 3×14 . Has 5 small knots scattered on face; 3 inches sap on two edges of outside.

Example 5.— 2×20 . Has 2 small saps on outside, a small shake for 1 foot at one end of heart face, otherwise perfect. (This would be a first but for the shake).

Example 6.— 2×18 . Has a perfect face except a worm hole coming through. On sap side a 4-inch sap at end tapers to nothing at 6 feet on both edges.

Example 7.— 2×14 . A sap side free from defect; 8 small knots in line in center of heart side.

Example 8.— 2×14 .—A narrow face rot extends 4 inches from end, otherwise good face side. On outside, sap meets at end, tapering out on each edge at 7 feet from end.

Example 9.— 2×17 . Has a small knot on the heart face within an inch of the edge. Sap nearly meets at end on sap side, narrowing to a point within 4 feet of other end.

Example 10.— 1×10 . A clear face; outside nearly covered with bright sap.

B SELECT.

Is the next grade below A, and comprises pieces nearly but not quite good enough for the A grade. It may have more sap or more knots, or both, provided not too much of either. Will allow of end shake when cutting would raise the grade.

Example 1.— 2×20 . Has 4 inches of sap on two edges, with 5 small knots and a cat face. On heart side 9 small knots well scattered and a trace of sap. These knots range from $\frac{1}{4}$ -inch to $\frac{1}{2}$ -inch in diameter, and are favorably located near center line.

Example 2.— 2×17 . On heart side 3 black (rotten) $\frac{1}{2}$ -inch knots, two of these within 18 inches of end and 6 inches of edge, the other 6 feet from end, 8 inches from edge. On sap side a ring rot streak 3 inches wide at end tapers out at 5 feet; two of the knots are opposite this streak. Sap side is otherwise perfect except $1\frac{1}{2}$ inches bright sap on one edge tapers out at 8 feet.

Example 3.— 1×8 . A clear face; other side has $1\frac{1}{2}$ inches of bright sap on one edge. (Should be classed as an 8-inch clear and A base.)

Example 5.— $1\frac{1}{4} \times 14$. A clear face; on sap side a narrow, somewhat wormy and black sap on one edge, tapers out at 6 feet.

Example 6.— 2×13 . Is old timber, showing age checks within 2 inches of one edge, otherwise clear.

Example 7.— $1\frac{1}{4} \times 10$. One side nearly covered with sap, which shows for an inch on face side on one edge.

Example 8.— $1\frac{1}{4} \times 9$. Sap on one edge rolls over on both faces, showing $1\frac{1}{2}$ to 2 inches on each.

Example 9.— $1\frac{1}{4} \times 14$. One face clear except a slight sap showing for a foot at one end. On sap side well covered with sap showing only small proportion of heart wood.

Example 10.— $1\frac{1}{4}\times 22$. A piece from near the heart; sap side is perfect, but a line of heart knots and checks makes one-half the heart side common, a 3-inch strip ripped out of center would leave two clear strips.

Example 11.— 1×8 . A full sap side; near end on heart side a $1\frac{1}{2}$ inch knot, a slight sap runs over to this face.

Example 12.— $1\frac{1}{4}\times 16$. Bright sap covers two-thirds of face side, with one small knot; is badly edged. On heart side a cluster of five small knots within 2 feet of one end. Two inches of sap and 2 knots on one edge of other end.

Example 13.—Has one good face; sap meets in middle of sap side, but both ends meaty.

2×4 , 2×6 and 2×8 clear and select form the closing items of this section.

It is not expected that the same rigid judgment should be adopted upon these as upon the wider descriptions. The uses to which they are adapted will allow of more proportionate defects. The clears and selects are therefore combined, and while some perfect pieces will be found in a pile, and it is expected that a good face shall be presented in each piece, one side may have considerable sap, or if the sap side be perfect, one or two small knots upon the heart side will not throw it out. One good side, however, is generally demanded, and the stick must be free from shake and rot.

ONE INCH FINISHING.

One-inch finishing grades are subject in the main to the rules governing the thicker lumber. In practice as narrow as 7 and 8 inch wide is allowed, it being then classed as base, in which A and clear are combined. B base is of the same general description as B select, described in the former division, except as to being narrow ;

“Thin” clear and select of 9-inch and upward, differs only in that it is less than 1 inch thick, otherwise up to standard

TWELVE INCH STOCK BOARDS.

A stock, 12, 14@16 ft.....	\$41 00	12 in. com., 12 ft.....	\$16 00
B “ 12, 14@16 ft.....	37 00	12 “ “ 14@16 ft.....	14 50
C “ 12, 14@16 ft.....	32 00	12 “ “ 18 ft.....	18 00
D 12, 14@16 ft.....	24 00	12 “ “ 10@20 ft.....	18 00
D 18 ft.....	24 00	12 “ No. 2, 12 ft.....	14 00
D 20 ft....	24 00	12 “ No. 2, 14@16 ft.....	13 50

(NOTE.—As previously, we retain price quotations as an index of the relative value of one grade to another.)

Next in division to the clear and finishing grades the price list treats of “Stock Boards and 12-inch common boards.” When a log is sided down to a size, which is usually 10 inch, 12 inch, 14 or 16 inch,

the boards which drop from the "stock" are uniform in width, and are termed stock boards, and these in gang mills are produced in quantity to warrant separate piling from the general cut of miscellaneous widths, and are in demand by parties desiring a quantity of a given width. These are selected or graded according to their quality, and receive designations representing those qualities, A, B, C and D. When the quality is not up to the standard of D, a stock board is simply a 10 or 12 inch (as the case may be) common. Lumber cut in quantities to uniform widths and thickness usually bears a better price than is accorded to miscellaneous widths of the same quality. We do not look for much sap as a rule in "stock."

A stocks are very nearly third clear, and in many instances fully reach that grade. The imperfections are small, consisting usually of small sound knots and bright sap. The following examples will convey a better idea than a general description can do. Where sap is mentioned it is understood to be bright, unless otherwise stated:

Example 1.—1x12-14. Heart side has 6 pin knots (1 pin knot is from the size of a pencil point to the diameter of a lead pencil) scattered over the surface. Has no sap, and the sap side is free from knot, sap or other blemish.

Example 2.—1x12-14. Heart side has 2 small knots, of which one is a pin. Sap side is perfect.

Example 3.—1x12-14. Heart side shows 2 pin knots and 4 small cat faces. Sap side is perfect.

Example 4.—1x12-14. Heart shows 4 cat faces, in two of which pin knots show, and one knot of $\frac{3}{8}$ -inch diameter. Sap side shows the $\frac{3}{8}$ knot as a pin, otherwise is perfect.

Example 5.—1x12-14. Heart side has one sound knot, size of a quarter dollar, and 1 pin knot. On sap side the big knot shows as a $\frac{3}{8}$ knot, but no sap.

Example 6.—1x12-16. Heart side is perfect, except a narrow trace of sap on one edge. On sap side there is 2 inches of sap on both edges the full length of board.

B STOCKS.

Example 1.—1x12-16. Heart has 6 pin knots but no sap. Sap side has a narrow bright sap on each edge, and 3 pin knots.

Example 2.—1x12-14. Heart shows a trace of narrow bright sap on both edges for 4 and 6 feet from one end, with 2 pin knots. The sap side has bright sap on both edges of one end, from $2\frac{1}{2}$ inches wide tapering to 1 inch in center of the length, and thence to nothing.

Example 3.—1x12-14. Heart has 3 pin knots. Sap side shows 1 pin knot, and a very narrow sap full length of one edge.

Example 4.—1x12-16. Heart shows 4 knots from pin to $\frac{3}{8}$ -inch and a cat face, with a very light bright sap on one edge. Sap side shows 3 pin knots and one heavy bright sap on one edge.

Example 5.—1x12-16. Heart shows 6 fine pin knots, with $1\frac{1}{2}$ inches of discolored sap, full of pin worm holes. Sap side shows 3 small pin knots near one end, with $1\frac{1}{2}$ to 2 inches of discolored (not black) wormy sap on both edges.

Example 6.—1x12-16. Heart side has a $\frac{1}{2}$ to $\frac{3}{4}$ -inch bright sap on one edge, otherwise perfect. Sap side both edges show discolored sap the full length, ranging from feather to 2 inches wide in spots.

Example 7.—1x12-16. Heart side has 3 knots, size of a quarter dollar. Sap side shows the same knots a trifle smaller. No other defects in the piece.

Example 8.—1x12-12. Heart has 2-inch sap at one end on one edge, tapering to nothing at other end; 2 small knots within 2 feet of one end. Sap side has 4 inches sap on one edge, tapers out at other end. The other edge has a 2-inch sap in center which tapers out at ends, and one small knot shows through from other side.

C STOCKS.

As defects have increased between A and B stocks so may they continue to increase as we reach the lower grades, and the following examples of C stock are given:

Example 1.—1x12-12. Heart has 8 small knots of $\frac{1}{2}$ -inch, sound and in pairs, Sap on each edge tapers from nothing at one end to from 1 to $1\frac{1}{2}$ inches at the other. Sap side shows 6 of the knots, with sap on each edge, of 2 inches, narrowing in spots to 1 inch.

Example 2.—1x12-16. Heart side has 16 knots from pin upward, one being an inch broad by 2 inches long, on the edge of the board, and one of $\frac{3}{4}$ -inch near the center; one of $\frac{1}{2}$ -inch is rotten all the way through, the rest are small and red. On sap side the rotten knot is $\frac{1}{2}$ -inch, and there are 6 small red knots, a trace of sap on both edges, widening on one edge to $1\frac{1}{2}$ inches at the center.

Example 3.—1x12-16. Heart has 6 knots from $\frac{1}{2}$ to $\frac{3}{4}$ -inch and 4 cat face pins. Knots are mainly on one side of the center line. Sap side shows 4 knots and a $\frac{1}{2}$ to $\frac{3}{4}$ -inch sap for two-thirds the length of one edge.

Example 4.—1x12-12. Heart side has 7 small sound knots and one of 1 inch fairly in center line with a trace of sap for five feet on one edge. Sap side shows 5 pin ($\frac{1}{4}$ inch) knots, with a narrow sap not over an inch wide at any point, and not running the entire length, but broken at several points.

Example 5.—1x12-16. Heart shows 12 knots, two of them as large as $\frac{1}{2}$ inch, with a trace of bright sap on one edge. Sap side shows 7 of the knots (the largest $\frac{1}{4}$ inch) mostly the size of a small pea; both edges show a narrow line of bright sap 1 to $1\frac{1}{2}$ inch at widest.

Example 6.—1x12-14. Heart shows 7 sound knots, two are the size of a silver dollar; none of the rest are over $\frac{1}{2}$ inch. No sap. Sap side shows 7 knots, one the size of a dollar, one the size of a half dollar; the rest mostly pins from a curl to $\frac{1}{2}$ inch. On one edge a $\frac{1}{2}$ -inch streak of bright sap runs out 6 feet from end.

Example 7.—1x10-12. Heart has 4 knots, two of size of quarter dollar and 2 pins. A sound gum streak eight inches long; just a trace of bright sap. Sap side shows the two largest knots, but smaller; two-thirds of this side is bright sap.

Example 8.—1x10-12. Heart has 7 knots, three the size of a quarter dollar; the rest very small. A slight sap on one edge. On sap side five of the knots show through with a sap on each edge averaging two inches wide the full length.

Example 9.—1x10-12. Heart shows 13 knots, some of them simple curls; 3 as large as a quarter dollar, others size of a dime and less; all red and sound. A narrow sap on edge for three feet from one end. On sap side are two pin knots. On one edge sap is 3 inches at end, running out in 4 feet; on other edge a sap of 2 inches tapers to $\frac{1}{2}$ inch in 6 feet of length, showing traces the full length.

Example 10.—1x10-12. Heart has 7 knots size of a dime to as small as pin. Sap side shows one open knot 2 inches from edge and 4 pin knots. On one edge sap is 3 inches at end, tapering out at 9 feet; on other edge a 3-inch sap tapers out in 3 feet.

Example 11.—1x10-12. Heart has one large black knot 3 feet from end and well to one side, a knot size of quarter dollar near the middle; 6 pin knots and a trace of shake. On sap side the large knot and 3 pins. On one edge a sap of 2 inches runs out at 4 feet. On the other edge a one inch sap extends 2 feet each way from the center.

Example 12.—1x10-12. Heart has two large black knots, one in the edge, the other near the center, and 2 pin knots. Sap shows the large knots and considerable close shake at one end.

D STOCKS.

Example 1.—1x12-14. Has 16 sound, red knots all showing through. Six are of the size of a dollar; the rest range from pins to size of a quarter dollar. All are sound and well placed. This piece has no sap.

Example 2.—1x12-14. Has 17 sound knots, 11 of them could be covered by a dime, 4 by a quarter dollar, 2 by a dollar; 8 of them show through to outside. No sap.

Example 3.—1x12-14. Heart shows 9 sound knots; 2 could be covered by a half dollar, 2 by a quarter dollar; the rest from pins to size of a dime; has half an inch bright sap on the edge, tapering out in one foot. Sap side shows two knots that a quarter dollar will cover, and 5 that a dime would cover. An inch of sap at one end on one edge tapers out at 3 feet.

Example 4.—1x12-14. Heart shows 8 sizable knots, red, sound and well scattered; one is in the edge at one end and is 2 inches in diameter. One at a foot from other end is the size of a dollar; 2 would be covered by a half dollar; others are from size of a quarter dollar to a dime. On the sap side all the knots show through and hold their size. At one end is 7 inches of meat between sap edges; sap tapers out at 4 feet from end on one edge, and 8 feet on the other. All the knots are a bright red and well placed.

Example 5.—1x12-14. Is a board without sap. Has 11 knots showing on both sides, black but sound; 7 of these could be covered by a dime, 2 by a quarter dollar and 2 by a dollar. This board from the favorable position of the knots would cut up two-thirds clear.

Example 6.—1x12-14. Is a board from near the heart of the log; 13 sound

bright red knots in clusters of 3; show on both sides. The first cluster 18 inches from the end, the rest 30 inches apart; would cut 4 clear panels 30 inches long. No sap.

Example 7.—1x12-14. Heart has 18 knots well scattered, 6 are the size of a quarter dollar; the rest could be covered by a dime down to pins; all are sound and red; 14 of the knots show on sap side. One half of this board would be utilized cutting to good advantage in fine work.

Example 8.—1x12-16. Heart shows 10 good knots; 3 could be covered by a half dollar, 2 by a quarter dollar; the rest small and well scattered. A carpenter would not waste more than 25 per cent. in cutting for a clear finish.

TWELVE INCH COMMON.

Is good sound common lumber all 12 inches wide, free from loose knots, or knots which would weaken the piece. Lumber that will hold water. Is suitable for a board roof. Knots if sound and of character indicated, may be many in number. A reasonable amount of sap does not condemn, especially if bright, nor do edge saps, even if discolored, but the general character of the lumber is that of soundness and fitness for any use outside of finishing grades. While red knots are the most desirable sound black knots do not exclude, unless they are of a character to unfit the piece for ordinary uses in common work. As a rule, however, red knot common is held in higher estimation and price than black knot.

Almost any man whether an expert or not can tell a piece of good common. The No. 2 grade requires a more expert judgment, and we give an example of

TWELVE INCH NO. 2.

Example 1.—1x12-14. Is a board with 10 large knots and several small ones. The former large and coarse, mainly red inside of black circles; could be knocked out by considerable pounding. One upon the edge is rotten upon one side, but reasonably sound on the other; two others are black and of an unsound character. The small knots are sound and red.

Example 2.—1x12-12. Is from near the heart with a large number of small sound red knots; one end shows heart shake for a foot or more.

Example 3.—1x12-12. Was cut from near the heart and shows fine heart shakes over a good part of its length; knots are all sound, small and of good character.

Example 4.—1x12-16. Coarse but sound heart knots; heart shakes for 4 feet from one end.

Example 5 —1x12-16. Has 10 knots mostly large and coarse; one is rotten. This piece was cut from a log broken in falling, and the board shows the break for half its width (our individual judgment would class this as a mill cull or in No. 3 boards).

Example 6.—1x12-16. Has a dozen big sound knots. At four feet from end a coarse “limb” knot throws the grain across the board, which must be carefully handled to avoid breaking, but for this, or if sawed off here, the board would be fair 12 foot common; if left with a broken end, a good No. 2.

Example 7.—1x12-12. Is a heart board showing heart shake through the center for half its length. Knots small and sound.

Example 8.—1x12-14. Has 13 knots; 6 are small but unsound on one side but fairly sound on the other.

Example 9.—1x12-16. A board from near the heart. Knots in the main small and sound, but one big knot on the edge runs to near the center. If ripped one-half would make a No. 1 fencing strip, the other would break at the knot, which is too far from the end to make a good mill cull of the strip.

Example 10.—1x12-16. Is full of coarse large knots which are sound. One edge shows heart shake.

Example 11.—1x12-16. Is a heart board of sound character, but knots are large and run from edges to center; could be used whole for a batten on board roof, but if ripped both pieces would break in two at the knots.

Example 12.—1x12-16. Is a “liner,” knots, red and tight, but two of them are $2\frac{1}{2}$ inches broad and unfavorably located. Would rip one good common flooring strip and one No. 2 fencing strip.

Example 13.—1x12-16. Very coarse oblong (but red) knots, with sap on both edges of both sides.

Example 14.—1x12-16. A sound but coarse knot board, from the heart; would not bear ripping, but as a whole would make a tight roof.

Example 15.—1x12-12. Is a board free from knots, but has fine shake running over a good portion of one end. A novice would call it a clear, an expert would call it a “shipping cull.”

In the preceding chapters we have treated of the subdivisions of the Chicago price list including thick clears and select, one-inch finishing grades, twelve-inch stock grades and twelve-inch common, and we now take up the “Box Boards” grades, retaining price quotations as an index of the relative value of one grade as compared with another, in the Chicago market. Green Lumber is usually valued at \$1.00 less than dry.

BOX BOARDS.

Mixed Lengths.—Dry.

					ROUGH.
A	Box	13	inches	and upward.....	\$45 00
B	“	13	“	“ “ “	42 00
C	“	13	“	“ “ “	34 00
D	“	13	“	“ “ “	25 00

All 14 feet, \$2 extra.

Add to foregoing prices for dressing one side \$1; two sides, \$1.50.

Box boards are 13 inches and upward in width: “A” Box is a

grade which would *usually* be included by a Saginaw or Albany inspector among the seconds or thirds of clear, where firsts are perfect and without blemish. Seconds may have one or two small blemishes while thirds may increase defects according to the size of the board, and the small area of the defects.

EXAMPLES OF "A" BOX

Example 1.—1X18-14. Is a board which would inspect clear in any market, from its size and the slight character of its defects. On the heart side, 6 inches from one end, is a $\frac{3}{8}$ inch sound knot which shows to sap side as a pin. Three feet from same end on heart side is a pin knot not over $\frac{1}{8}$ inch. The piece is otherwise perfect.

Example 2.—1X14-16. Heart shows 4 cat faces, one of which is a pin knot. On the sap side, one edge has a streak of sap from $\frac{1}{2}$ inch to $1\frac{1}{4}$ inch the entire length; on the other edge a $\frac{1}{2}$ inch sap shows for 4 feet in the center of length, tapering out each way. No other blemish.

Example 3.—1X15-16. On heart side 6 feet from end is a cluster of 5 *pin* knots, the balance of the face is perfect. On sap side, 4 of the pins show through. On one edge a 2 inch sap at one end tapers out in 12 feet. On the other edge a $\frac{1}{2}$ inch sap tapers out in 2 feet.

Example 4.—1X13-16. Heart has no knots. On one edge a $\frac{3}{4}$ inch sap tapers out in 4 feet from end. On sap side, a 3 inch sap on one edge narrows to $1\frac{1}{2}$ inches in a length of 18 inches, and tapers out at 10 feet. On the other edge a $2\frac{1}{2}$ inch sap tapers out in 8 feet.

Example 5.—1X14-16. Heart is perfect. On sap side, one edge a 3 inch sap at end narrows to 1 inch in 3 feet, and tapers out in 10 feet. On the other edge a 2 inch sap tapers out at 4 feet.

Example 6.—1X20-16. Heart has a knot the size of a dime, and one of $\frac{3}{8}$ inch. A $\frac{1}{2}$ inch sap on one edge runs out in 2 feet. On sap side both knots show through full size, and at one end a 1 inch sap runs out in 4 feet, and opposite side of other end a 1 inch sap runs out in 6 feet.

Example 7.—1X22-16. Heart side has a $\frac{3}{8}$ inch sap, 2 feet long, near center of length on one edge. Otherwise perfect face. On sap side one edge has irregular sap from $\frac{1}{4}$ inch to 1 inch the full length. On the other edge 18 inches from end starts, widens to $1\frac{1}{2}$ inch, and runs out in a length of 6 feet.

EXAMPLES OF "B" BOX,

Example 1.—1X13-16. Heart side is perfect for 13 feet of the length, where is a cluster of 3 small red knots within a square 3X3 inches. Within 12 inches of this end, 5 inches from one edge, is a knot the size of a half dollar. On the sap side all the knots show through, and on each edge a sap in no place more than $1\frac{1}{4}$ inch runs out in 5 and 6 feet.

Example 2.—1X13-16. Heart side has 5 small red knots, none larger than a dime; 2 of these knots show on sap side. The board is otherwise perfect.

Example 3.—1X14-14. Heart side shows 5 pin knots near center. One edge has $1\frac{1}{2}$ inches of sap the full length. On the other edge 1 inch sap tapers out

in 4 feet. At one end a slight shake shows near one edge (board is fully seasoned and shake fully developed). On sap side $2\frac{1}{2}$ inch sap runs whole length of one edge, and a 2 inch sap tapers out at 4 feet. On the other edge 2 pin knots show through. (Individual judgment would lead us to call this a *hard B*).

Example 4.—1X13-16. Heart shows 5 small sound knots of good character well scattered. Sap side shows same knots smaller in size. One edge shows 1 inch sap for two-thirds the length, and the other a 2 inch sap tapering out in 12 feet.

Example 5.—1X14-14. Heart shows 11 pin knots mainly through the center line, with a $\frac{3}{4}$ inch knot 4 feet from one end and 3 inches from edge. This edge has a trace of sap for 3 feet. Sap side shows 3 pin knots and a narrow sap, from feather to not over 1 inch, on one edge, and a trace, not over $\frac{1}{2}$ inch, for 4 feet near center of other edge.

EXAMPLES OF "C" BOX.

Example 1.—1X14-14. Heart has 14 small sound knots, with $\frac{1}{2}$ inch sap full length of one edge. On sap side 10 of the knots show through, the largest not $\frac{1}{2}$ inch in diameter, and one edge shows 1 inch sap full length.

Example 2.—1X13-14. Heart shows 10 knots from $\frac{1}{4}$ to $\frac{1}{2}$ inch and 1 size of a dollar. No sap. Sap side shows 7 pin knots and the large knot (this is near edge 1 foot from end) and a *trace* of sap at one end on one edge.

Example 3.—1X13-12. Is a good sound common board, which would rip a fair strip (having a little sap on one side), and leave a good fencing strip. (Individual judgment would call this a liner too good for D, but only a passable C).

Example 4.—1X13-16. Is another board we consider a *liner*. Has 10 moderate sized knots, black, but well scattered, and show through. On sap side 1 to $1\frac{1}{2}$ inches sap on each edge. Would cut up well from favorable position of knots. Is a good D, but a poor average C.

Example 5.—1X18-14. Has 10 scattered knots of size of quarter dollar, showing through; are well located for cutting up; a slight trace of sap on heart side, with a narrow sap on one edge of sap side.

Example 6.—1X13-16. Has 13 small sound red knots, which show through. A narrow sap on one edge of heart side. On sap side sap is from 1 to $2\frac{1}{2}$ inches full length of one edge.

Example 7.—1X18-14. Heart side shows 14 knots, none larger than a dime, mostly smaller. No other blemish. On sap side 10 small knots well scattered, and a large surface worm hole near one end. A $\frac{1}{2}$ inch sap at one end runs out in 4 feet.

Example 8.—1X15-16. A board cut from near and showing traces of the heart. One edge would rip a clear 6-inch strip, or a 10-inch if cut to 12 feet. Has several knots, all within 7 inches of one edge, all small and sound. Sap side shows a mere trace of sap on one edge.

EXAMPLES OF "D" BOX.

Example 1.—1X13-14. A good sound common board, sound tight knots on both sides, and a narrow sap on one edge of sap side.

Example 2.—1x16-16. A nice sound common board, showing 8 knots; 2 are size of half dollar, 2 the size of a quarter dollar and 4 size of a dime, well scattered. On one edge of heart a sap 1 inch wide, runs half the length. Sap side shows 7 knots about same sizes. On one edge sap narrows from 2 inch at end, tapering out at 13 feet.

Example 3.—1x14-14. Heart has 3 knots size of a half dollar, 2 size of a quarter dollar and 7 pins. No sap. Sap side shows 3 large knots, 2 smaller, and 3 pins, with a narrow sap two-thirds the length of one edge.

Example 4.—1x16-16. A scattering red knot board; 10 of the knots are from half a dollar to a dollar in size; 10 are size of quarter dollar, with 7 pins. All sound and bright. Most of the knots show through, with on sap side, a narrow sap on one edge of each end on opposite edges.

Example 5.—1x14-16. Heart has 3 large knots; 2 are size of a half dollar, 1 of quarter dollar, also 4 from pin to size of a dime. A 2-inch sap on one edge runs out about center of length. Sap side shows all the large knots and 1 pin. Sap of 3 inches on one edge runs out in 12 feet.

Example 6.—1x13-16. Heart has 1 knot size of half dollar and 10 the size of a dime, well scattered for cutting up. Sap side shows the same knots with 1½ inches of sap running out at 4 feet.

Example 7.—1x16-16. Heart has 3 large coarse knots on edges, 1 black knot size of a dollar and 4 black knots size of a dime. No sap. Sap side has all the knots of smaller size and a mere edge of sap at each end on opposite edges.

Example 8.—1x15-14. Heart has large red knot, one ¾ inch knot and 1 pin knot. A 2-inch sap on one edge tapers out at 10 feet. Sap side shows both large knots; on one edge a 1 inch sap at one end broadens to 3 inches at the other; on the other edge an irregular sap from nothing to 1½ inches, runs the whole length.

Example 9.—1x13-12. Is a nice common board; heart has 3 knots size of a quarter dollar, 5 the size of a dime, 12 pins and a mere trace of sap for 18 inches of one edge. Sap side shows 7 knots with a 1½ inch sap tapering out in 2 feet on one edge.

Example 10.—1x13-12. Heart has 3 knots size of quarter dollar and 7 small ones, 4 being mere pins, with a half inch sap for 4 feet on one edge. Sap side shows 5 of the knots, of which one is size of a quarter dollar, rest are pins. One edge has 1 inch sap running out at 3 feet; the other has from ½ inch to 1 inch sap the full length.

SIDING AND FLOORING STRIPS, ROUGH, 6-INCH.

1st and 2d clear, 16 ft.....	\$40 00	12@14 ft.....	\$39 00
A siding strips "	38 00	" "	37 00
A flooring strips, "	33 00	" "	32 00
B " " "	32 00	" "	31 00
C " " "	24 00	" "	23 00

Lumber cut into 4 and 6-inch widths is known as "strips," and these are selected and classified according to their adaptability for use in making clapboards (known as "siding" strips)

flooring in all its grades, or fencing to which use the coarser strips are devoted.

The present chapter has to deal only with siding and flooring strips, which may be cut from logs of any length. Siding strips are primarily supposed to be perfectly clear, but as there is sale for cheaper grades pieces having but slight defects, or defects so located that the clapboards will cut to reasonably clear work in laying, are included in an A grade. Below B it is useless to undertake a description as for the use to which clapboards are intended, the best "is good enough," and the demand for poorer is too limited to warrant any extended description.

1ST AND 2D CLEAR SIDING STRIPS.

A first-clear siding strip is all that its name implies; it is simply and purely without defect and fitted to make two pieces of clapboarding which are perfect in all respects. A second clear is so nearly like a first as to be almost identical. It may, however, have a trifle of bright caps on one edge, not over a quarter to a half-inch wide. The character of A sidings will show the line between it and first clear.

A SIDING STRIPS.

Example 1.—1x6-12. Heart side is perfect except a pin knot 16 inches from one end. On sap side a 2-inch bright sap on one edge, at one end, tapers out in 12 inches of length.

Example 2.—1x6-14. Heart shows 4 knots all on one edge and directly in the edge. They are sound white knots and two are the size of a quarter dollar, while two are oblong pins. On the sap side one of the knots shows through 18 inches from end. No sap. (This piece will re-saw, leaving all the knots in the thin edge of one piece, where they will be covered in the lap, the other piece being clear to lay, except the one knot.)

Example 3.—1x6-14. On heart 3 feet from end and 1½ inches from edge, a couple of bright, small pin knots; at 4 feet a sound black knot size of a dime, 2½ inches from edge. Sap side is perfect.

Example 4.—1x6-16. On heart side, 3 feet from end, a ¾ sound knot in center of width. On sap side a 1½ inch bright sap on one edge runs out in 3 feet.

Example 5.—1x6-14. Heart side is perfect. Sap side shows a narrow, bright sap from 1 inch at end to nothing in center, beginning again after an interval of 2 feet, widening to 1 inch and running out at end in ½-inch width.

Example 6.—1x6-14. Heart shows a pin knot a foot from end, and one edge shows ½-inch bright sap running out in 2 feet. On sap side this sap is 1 inch, running out at 5 feet.

Example 7.—1x6-12. Heart side is perfect. On sap side for 10 feet long, bright sap varies from nothing to ¾-inch wide on one edge.

B SIDING STRIPS.

Example 1.—1x6-12. Heart has a cluster of 4 small red knots in center of face, 4 feet from end, otherwise perfect. Sap side shows 2 knots size of a dime, showing through from heart. On one edge $3\frac{1}{2}$ inches of white sap tapers out at 18 inches length.

Example 2.—1x6-12. Heart shows one cat face and one knot size of a dime 1 inch from edge near center of length. On sap side one end an inch from edge a *surface* worm hole 2 inches long (will dress out.) No other defect.

Example 3.—1x6 12. Heart shows a cat face pin knot 18 inches from one end. On sap side bright sap meets at one end, but runs to nothing on both edges in 4 feet.

Example 4.—1x6-12. Heart shows a small white pin knot on one edge 18 inches from end; at 3 feet a pin knot in edge runs on to face and another small pin shows 1 inch from it. Sap side is perfect.

Example 5.—1x6-12. Heart at 18 inches from one end shows a dime knot 1 inch from edge. Eight inches from other end a quarter dollar knot on edge. Sap side shows same knots reduced in size. On one edge a $\frac{1}{2}$ -inch sap runs out in 4 feet; at other end same edge has $\frac{1}{2}$ -inch sap tapering out in 3 feet.

Example 6.—1x6-12. Heart shows 3 dime knots near center of length. They are scattered 2 feet apart, and between two of them is a pin knot. Sap side shows the 3 knots as pins, but no sap.

Example 7.—1x6-12. Heart has one oblong knot $\frac{1}{4}$ by $1\frac{1}{2}$ near center of one edge. On other edge a 1-inch sap tapers out at 18 inches. Sap side shows same sap, with no other blemish.

Example 8.—1x6-14. Heart has $2\frac{1}{2}$ feet from one end an oblong knot $\frac{1}{2}$ by 3 inch. Sap side shows the knot size of half dollar in one edge; the other edge a $\frac{3}{4}$ -inch sap tapers out in 3 feet.

FLOORING STRIPS.

Flooring strips follow in regular succession, and an A strip has a perfect face for dressing, whatever defects the other side may show. As long as a strip will lay a *surface clear* floor it is safe to call it an A. The other side may have knots or sap *ad libitum*; a clear face is a requisite.

A FLOORING STRIPS.

Example 1.—1x6. Heart is free from all defects. Sap side shows traces of sap, mainly white but with a tendency to discoloration in spots, a number of pin worm holes and four large but shallow ones.

Example 2.—1x6. Heart is perfect except a hair line of white sap. Sap side is solid sap at each end, with 5 feet of meat in the center.

Example 3.—1x6. Heart is perfect. Sap side has unsound sap for 2 feet at one end, with a number of pin worm holes in it; over this face we count 6 black worm holes.

Example 4.—1x6. Heart is perfect. Sap side is two-thirds covered with discolored sap.

Example 5.—1x6. Heart is perfect. Sap side all sap full of pin worms. A narrow wane 15 inches long near center of one edge.

Example 6.—1x6. Heart is perfect. Sap side perfect for half its length; the other half is mainly discolored sap filled with pin worm holes.

Example 7.—1x6. Perfect face except a small gum knot on one edge 2 feet from end, showing slightly on face; will work out in the tongue. Sap side shows this defect about the same, with unsound sap at one end covering the width for 12 inches, but tapering out at one edge in 2 feet.

Example 8.—1x6. Has a perfect sap side without defect. The heart shows three knots; one at 4 feet in edge is as large as a quarter dollar. Another at 6 feet, of $\frac{1}{2}$ -inch wide, runs $1\frac{1}{2}$ inches toward center. Two feet from other end is a sound red knot 1 inch broad by three inches long.

Example 9.—1x6. Has a perfect face for sap side, Heart shows a long, edge knot 12 inches from end, near center a twin knot $\frac{1}{2} \times 1\frac{1}{2}$. Within a foot of it is another sound, red knot in edge $1\frac{1}{2}$ inches wide running 2 inches long toward center.

Example 10.—1x6. Heart side is perfect. Sap side is perfect for 8 feet; the balance of face is covered with white, bright sap.

Example 11.—1x6. Heart is perfect. On sap side a 1-inch sap runs two-thirds the length on one edge, then quickly broadens to cover the whole face for 4 feet.

Example 12.—1x6. Heart is perfect. Sap side is solid sap which has begun to discolor.

B FLOORING STRIPS.

Example 1.—1x6. Heart shows 1 knot size of a quarter dollar on edge 6 feet from end; opposite edge has a sap from nothing to 1 inch wide for half the length. Sap side shows the knot as large as a dime. Sap at one end is 1 inch, varying for 7 feet when it covers the face for $2\frac{1}{2}$ feet, and runs out to $2\frac{1}{3}$ inches at the other end.

Example 2.—1x6. Heart shows from $\frac{1}{2}$ to $1\frac{1}{2}$ inches sap on one edge for half the length. Sap side is solid sap except a little heart wood at one end.

Example 3.—1x6. Heart shows one knot size of a quarter dollar 2 feet from end, and close to edge. Sap side shows streak of unsound sap $\frac{1}{4}$ to $\frac{1}{2}$ -inch wide for half the length on one edge, including $\frac{3}{8}$ -inch of thickness. One surface worm hole.

Example 4.—1x6. Heart shows $\frac{1}{4}$ to $\frac{3}{4}$ -inch dark sap on one edge for half the length. Sap side is almost solid black sap filled with pin worm holes. At one end, 4 inches wide 4 feet long, heart wood.

Example 5.—1x6. Heart shows a streak of white sap on one edge for 3 feet, not over $1\frac{1}{2}$ inches at widest. A slight shake shows at one end. Sap side has a narrow, white sap two-thirds the length, widening to cover 3 feet of one end.

Example 6.—1x6. Heart has a narrow white sap on one edge, $1\frac{1}{4}$ inches at widest, tapering out in two-thirds the length; on other edge a white sap of 1 inch at one end tapers out in 4 feet, at the other end at 2 feet. Sap side is all sap except an inch strip in center for the full length.

Example 7.—1x6. Heart has 2 knot; size of a dime on one edge and one 2½ inches from edge; near one end a 1-inch sap tapers out in 2 feet. Sap side shows edge knot and one ¼-inch knot near one end; at other end sap is full width but runs out at 6 feet. Two feet from end is a small, short wane.

Example 8.—1x6. Heart has a white sap 1 inch wide on one edge; tapers out at 2 feet. Sap side sap full width at one end for 18 inches; tapers out in two-thirds the length on one edge. This edge also has 18 inches of narrow wane.

Example 9.—1x6. Heart has ½-inch sap on one edge, which breaks in center; on other edge a ⅜-inch hollow knot. Sap side shows the knot sound. Two-thirds the surface is bright sap.

Example 10.—1x6. Heart has a 2-inch sap on one edge, tapering to nothing in 4 feet. Sap side is all sap, with a narrow wane at one end tapering out at center of length.

C FLOORING STRIPS.

Example 1.—1x6-14. Heart has a narrow, white sap on one edge from ½ to 1¼ inches wide for two-thirds the length. On sap side sap is from ¾-inch at one end, narrowing two-thirds the length, widens to 2½ inches narrowing to end. Sap is dark and full of pin wormholes.

Example 2.—1x6. Heart, 2 feet from end, has a large, double red knot ¾x2 inches; at 3 feet a small, sound knot near edge; at 5 feet a ⅜x1 inch red knot; three feet from other end a broad curl or exaggerated cat face. Sap side shows 3 of the knots sound and red, but no sap.

Example 3.—1x6-14. Heart perfect for 9 feet, then a bright edge sap starts, which in 2 feet widens to cover the balance of the face. Sap side shows heart wood for 4 feet, balance all sap with considerable pin worm hole.

Example 4.—1x6-14. Heart shows 7 small knots scattered principally in the edges. Sap side shows 4 of the knots.

Example 5.—1x6-14. Heart shows 2 small knots in center line and 1 on edge; on the other edge a ¾ sap runs out in 2½ feet. Sap side shows all the knots a trifle smaller with sap on one edge from 2½ inches at end, tapering out in 6 feet.

Example 6.—1x6-14. Heart shows one small knot in edge; the other edge a white sap 1½ inches at each end tapers to feather in center. Sap side shows this sap 2½ inches at each end 1 inch in center.

Example 7.—1x6-12. Heart has three knots the size of a dime, and a pin knot cluster. Sap side shows the 3 knots a trifle smaller.

Example 8.—1x6-14. Heart has three knots the size of a dime equi distant on one edge and 1 pin knot in center. Sap side shows same knots smaller and less sound in character.

4-INCH FLOORING STRIPS

are of the same general character as the 6-inch, but less defects are allowed in proportion to the decreased width. The main point in view in the grading of flooring is to get a good face *in the quality designated*. A good face in B or C is not expected to be as perfect as in first and second clear, nor yet A. Yet a B or C 4-inch should average better than in 6-inch. A 4-inch C when dressed

often shows a perfect face, while one or two small, sound knots not over $\frac{1}{2}$ inch well located, or a moderate amount of bright sap, does not condemn. Knots on the back, making a fair face of the sap side, or in the edge where the tongue or groove will work them out, are no injury. The *general* character of C flooring is that of a grade which by a little cutting, will lay a nearly clear floor.

DRESSED LUMBER.

A Flooring, 6 in.....	\$34 00
B " "	33 00
C " "	25 00
No. 1 Fencing, 6 in., D. & M.....	17 00
No. 1 10 foot Fencing, D. & M.....	15 00
No. 1 Norway Fencing, D. & M.....	16 50
Clear and A, 4 in.....	33 00
B Flooring, 4 in.....	31 00
C Flooring, 4 in.....	26 00
Norway Clear and A, 4 or 6 in.....	23 00
" B, 6 in.....	21 00
" B, 4 in.....	21 00
" C, 6 in.....	18 00
8 in., No. 1 Boards, D. & M., or Ship Lap.....	15 50
10 in., No. 1 Boards, D. & M., or Ship Lap.....	16 00
A Partition, D. & M., 2 sides, 4 beads.....	39 50
B " " 2 " 4 "	35 00
C " " 2 " 4 "	27 00

The different designations of dressed lumber simply represent the same grade described in the rough, after it has passed through the machine. In dressing it is no unusual thing for the grade to be raised, so that what was passed in "B" in the rough, will develop under the knife a face which will entitle the piece to be raised to the grade above. So likewise a hidden defect may be developed in the dressing which will throw the piece to the grade below. In a piece of "A" flooring, it is a requisite that there be a face which will lay a *practically clear* floor. So while the heart side of the board may be very defective by reason of several knots, if the sap side will dress free from knots, and nearly free from sap, and that sap is white, it will make an "A." So again the sap side may show worm holes or black sap, if the heart side is perfect the defects of the sap side will not condemn the piece. But such defects must not be of an extent which will prevent the forming of a perfect and solid tongue and groove. In grading such a piece the judgment must determine to what extent the defects upon one side will affect the face *and the* edges. If it has one clear face and two clear edges, or the knots in the edges do not come to the face, nor weaken the tongue nor groove, it is an "A." We have said a practically clear face; a *narrow* bright sap or a *pin* knot will not usually exclude a board from an "A"

grade, in a lot of lumber where the general run of stock is free from all defect. Speaking of the defects in this grade, we may call attention to the fact, that while an "A" is expected to lay a clear floor, if *no* defects were admitted to the rough side, the piece would be a "siding" instead of a "flooring" strip, hence the blemishes on the rough side of a piece of flooring, are wholly lost sight of, if the face and edges are all right for a specified grade. In defining a grade of flooring one serious defect must not be forgotten. A board may be perfectly free from knots, rot, sap, and shake, and yet by reason of bad surfacing, in which the knife eats into the timber, tearing it, in place of dressing, leaving its surface rough, this perfect piece of timber may be only entitled to the "C" grading, or may be of doubtful utility as "fencing" flooring. A purchaser of A, B, C, or even fencing flooring is entitled to a *smoothly surfaced* board, which will lay a smooth floor; not one filled with ridges or rough eaty spots. A greatly appreciated quality of Chicago dressing is in its uniformity. A piece of lumber dressed at one of the many mills of Chicago will fit and match to that of any other mill. Herein is a hint to planing-mill men everywhere. A dealer cannot afford to buy miscellaneous stock from localities where the Chicago standard is not

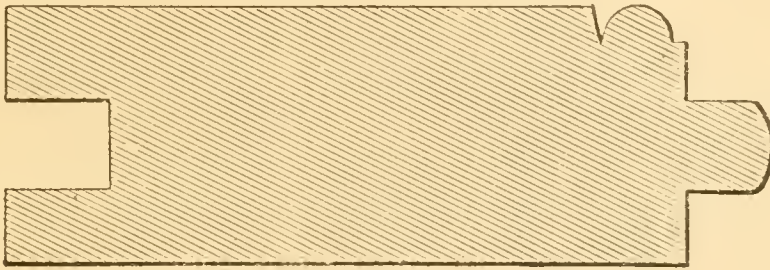


CHICAGO STANDARD TONGUE AND GROOVE.

adopted, otherwise he would soon find himself with several odd lots which could not be used, one with another. The Chicago standard for flooring is as follows: 6 inch strips should work $\frac{7}{8}$ thick by $5\frac{1}{4}$ inches wide on the *face*; the thickness above the tongue, $\frac{5}{16}$; the tongue (and groove), $\frac{5}{16}$; below the tongue, $\frac{4}{16}$. Some markets put the tongue and groove in the center of the thickness, but it will not answer in any market which looks to Chicago, and has no advantages to recommend it. Four inch strips work to $\frac{7}{8}$ x $3\frac{1}{4}$ inches face, with the tongue and groove same as in 6-inch. Southern manufacturers

lose advantage in Northern markets by adopting gauges differing from the above.

A and B flooring are usually piled together and sold as one grade, for it is difficult to draw the line between them in many cases. A strictly A is a clear surface, except a little bright sap or one or two pin knots; for examples we refer to our description on page 24, of the several grades. "Fencing" flooring is a good grade made out of common or fencing strips. If more closely sorted, so as to become better than an average sound common, yet not up to the "C" grade, it is entitled to the designation, "Selected." Norway grades are usually selected more closely than white pine, as this variety of timber



STANDARD WAINSCOT DRESSING.

enters but slightly into the better grades of lumber, and a smaller number of defects will suffice to reduce in grade.

The designation, "8 inch, No. 1, D. & M., or ship lap," as also the 10 inch, refers to good common lumber of the widths named. A, B and C "Partition" answers in grade to A, B and C flooring, except that it must show two sound sides, as it is dressed on two sides and beaded. It cannot, therefore, allow the latitude for defects that the flooring would permit. So while a board suitable for "A" partition, would make an A flooring, a piece good enough for A flooring might not answer for A partition, because of the defects on one side.

SIDING.—TIED.

1st and 2d Clear, 12, 14 and 16 ft.....	\$21 50
A Siding.....	20 50
B ".....	19 00
C ".....	13 50
D ".....	10 00
$\frac{7}{8}$ in. Drop Siding, 6 or 8 in., 50 cents more than Flooring.	

Siding or "clapboards" is the next subject to engage our attention. Of the clear it is only necessary to say that it is supposed to be

absolutely perfect, except that in the combined grade of firsts and seconds some slight but not injurious defects such as a trifle of bright sap on the thin edge, may be allowed. These should not exceed one-quarter to one-half inch in width. A pin knot in the thin edge would not usually condemn, but the idea of a clear piece of siding, is that of a perfect piece of lumber sawed with a thick edge of scant $\frac{1}{2}$ -inch thick, and a thin edge of plump $\frac{1}{4}$ -inch, sawed from 1x6, dressed to scant $\frac{3}{4}$ after re-sawing, to a width of $5\frac{5}{8}$.

A SIDING

Allows two to four small sound knots, or a half-inch of sap if bright. The knots must be small, partaking of the character of "pins"; large knots would not be allowed in this grade, unless in the thin edge, where they would be covered by the lap. The general character of an A siding approaches closely to clear. No shakes nor splits can be admitted to this grade. Reference to our description of siding strips, and the examples there given, gives a correct index of the various grades of siding.

B SIDING

Allows of four small knots, scattered over the face of the piece; knots may be of larger size if favorably located. A knot as large as $1\frac{1}{4}$ inch on the thin edge, which will be covered by the lap, would not condemn. All knots must be tight and sound. Small saps if bright, and not extending more than three or four feet from one end, pass in this grade. A worm hole in the thin edge would do no harm. B siding is calculated to cut up to good advantage between knots, which presupposes them to be located so as to give fair lengths of perfect lumber between, or to be so small as to do little damage if the piece is used as a whole.

C SIDING

Is a fine, common grade. It may have five or six small knots, and will permit of one-third bright sap, when no other defects; if slightly discolored it will not be rejected. It may have some fine shake, if otherwise perfect, but it must be close, and not open-heart shake.

D SIDING.

D siding is simply good sound common, such as would be selected from a fine grade of flooring strips. It may have both sap and

knots, or if otherwise nice, may have some shake. It is the poorest grade into which siding is manufactured. It will make as serviceable house covering as the better grades, but does not look so well, nor will it cover with paint without shellacking the knots. Siding is usually put up in lengths of 12, 14 and 16 feet, but 4, 6 and 8 feet are often made. A desirable article is made in some markets by sawing from the log direct, the outside diameter of the log furnishing all the butts, the taper coming from toward the heart of the log. The sap is then edged off and the piece run through the planer, the bed of which is arranged to accommodate the taper of the board. Siding is usually $5\frac{1}{2}$ and $5\frac{5}{8}$ inches wide, although $5\frac{3}{4}$ is more desirable for Eastern shipment.

BEADED CEILING.—TIED.

Clear $\frac{3}{8}$ in., 4 and 6 in.....	\$22 00
A, $\frac{3}{8}$ in., 4 and 6 in.....	21 00
B, $\frac{3}{8}$ in., 4 and 6 in.....	19 00
C, $\frac{3}{8}$ in., 4 and 6 in.....	14 50
Clear and A, $\frac{5}{8}$ in.....	32 00
Clear and A, $\frac{3}{4}$ in.....	33 00
B, $\frac{5}{8}$ in., 6 in.....	29 00
B, $\frac{3}{4}$ in., 6 in.....	32 00

Beaded ceiling is made from the same strips from which siding is made, but admits of more sap on one side than is usual in siding.

Clear embraces perfect lumber, same as in siding. As it is usually dressed on both sides before re-sawing, the defects on one side may reduce the grade one-half, or raise that of the other from what it would be in one-inch thickness. Still for clear, the face must be perfect.

A CEILING

Is made out of A siding strips, and will allow the defects named in that grade (see examples of A siding strips). A C strip, made so by a preponderance of sap on one side, may give a clear or A ceiling when the piece is re-sawed to $\frac{3}{8}$ -inch, the other half being B, C or D, according to the extent of the defects. So a sap strip, which would class as C in siding, may rip to make one clear or A ceiling. In $\frac{5}{8}$ or $\frac{3}{4}$ ceiling a sap board with a clear face will make an A. Ceiling is generally used where only one face is required, and where sap on the back is not likely to be unfavorably affected by alternations of wet and dry, consequently more latitude is allowable on one side when

the other is up to a given grade. Our examples of siding strips will convey a good idea of what constitutes the different grades of ceiling, so that we need not enter into more minute description in this section.

COMMON AND CULL BOARDS.

	DRY.
Common Boards, 10, 12 and 18 ft.....	\$14 00
“ “ “ 14, 16 and 20 ft.....	14 00
No. 2 Boards, all lengths.....	12 50
No. 3 Boards, all lengths.....	10 00
1½ and 1½ in. Common.....	14 00

It is needless to enter into a description at length as to what constitutes a first common board. Everybody knows that it must be a good sound piece of lumber, with knots of good character. Loose or rotten knots, large black knots, bad shake, rot and a large proportion of black sap; worm holes beyond two or three, according to the general character of the board, and bad splits, prevent a piece from being classified as “first” common. It is true that there are grades of common in various localities, and that black knots are not objectionable in some; that there is “good” common and poor common, and that what is called poor may yet be above the grade of second common, as known in the Chicago market. Yet in this market first common includes a good grade, all sound boards fit for placing on a board roof to shed water. Large coarse knots, an undue proportion of discolored sap extended shake, worm holes and rot throw a board down to second common. And yet in a good sound board a few worm holes on the edge, or in a wide board a slight discoloration from contact with a rot in the log, or even a slight rotten streak in the edge or end, would not throw the piece to a lower grade. Heart boards are almost invariably thrown into lower grades, and knots running well across the piece weakening it, or large limb knots, will reduce to seconds or thirds. A sap board is usually a good common when the face is knotty and the sap has seasoned bright, but when it is discolored it is of lower grade, unless it will go in shop common, when one side can be worked without waste. A first common board should be lumber which will work full for any common use, either side being in view, and a board which will answer for any use to which common lumber is adapted.

SECOND COMMON.

In cargo inspection we have common, culls (shipping) and mill

culls. That which an inspector would usually term a shipping cull is the second common of the retail yard. Heart boards, when the heart is reasonably sound, but not sound enough for a first common ; large, broad knots or V knots running from the heart toward the edges ; black unsound knots, rot streaks which are not extensive enough to prevent the board from being used for rough purposes ; worm holes, when the board is not riddled with them, heavy black saps and badly shaky boards are No. 2, or second common. The selection depends much upon the yards, some of which select closer than others and make their first common grades better, leaving their seconds proportionately poorer. Others grade closer on the common, making their second common better, and such yards are apt to make a still lower grade, that of

THIRD COMMON.

Which will embrace the poorer of the second common and the better of mill cull. Third common is drawing it rather fine, and embraces a class of lumber in which probably two-thirds of a board would work into coarse uses without waste. The general characteristics of this grade would be very coarse, including rot, wormy, shaky and other bad defects, embracing defects which, in a majority of yards would cause the piece to be classed as a mill cull. But few Chicago dealers make a third common grade, believing that anything too poor for seconds is properly classable as mill cull.

The following inquiry and answer thereto appeared in the April 15th issue of the LUMBER TRADE JOURNAL, and may be considered as forming a portion of the Grading articles, as they have been published in the JOURNAL from time to time.

WHAT IS A MILL CULL.

In your rules on cargo inspection (our correspondent probably refers to the rules of the Lumberman's Exchange), you describe mill culls as "refuse lumber." Now, will you please give me a better idea of what "refuse lumber" may be. I would like you to describe as near as possible what constitutes a "mill cull" in cargo inspection at the present time. I would also like a description of the line boards, for instance, a board which might be a little too good for a mill cull, but too rough for a shipping cull. Any information you can give me on these points will be considered a favor. K. R. W.

Mill culls have been known in various localities and at different times by the designations "Scoots," "Refuse," and "Mill Cull," and under each designation have at certain periods and in all localities, comprised that portion of the log which was considered absolutely worthless. With the growing scarcity of timber in each locality, that which was at first considered worthless has been utilized at a value, until at the present time much of that which was formerly consigned to the furnace is utilized in commerce. In the early manufacture of lumber only water mills were in vogue, and when the sawyer struck a rotten board, a loose heart, or large coarse knots, he "scooted" it into the stream and let it float away with the slabs. At that time only the choicest logs of the tree were considered worth sawing, and the "scoots" came principally from hollow butts. When the slabs and worthless lumber could not be floated away, but were burned on the mill yard, or when by accident some of the stuff (whether from rot, knot or shake) found its way with the better lumber to market, it was usually termed "refuse," and sold for what it would bring. For many years, indeed up to about 1850, it was not customary to allow "culls," which was the designation for anything poorer than a good sound common, to leave a mill, and in sawing "on shares" or by the thousand, the mill man kept all below sound common getting out of it, in sales to his neighbors, enough if possible, to pay his saw bill. When, after awhile, coarse lumber was wanted, buyers began to take a grade known as "coarse common," in which slightly loose hearts and coarse knots (when sound) were allowed. Presently the grade of cull was made, and included shake, loose and *very* coarse knots, sap stained sidings and small rotten streaks. Still, the absolutely worthless lumber was thrown out, and this included, for instance, a piece say twenty inches wide and two inches thick clear for four or five feet from one end when the rot ran out in swallow tails to the other. Later this good end was cut off, and with other "shorts" has become an article of commerce. To-day the term "refuse" applies only to what is *absolutely worthless*, "refused for any purpose." When the rules of the Exchange were adopted (about 1856, we think) no such thing was handled in the Chicago market as "a mill cull," and it was therefore termed "refuse," and the inspector instructed not to measure it at all if he found it in a cargo. Then a "cull" was a piece of lumber which would work sound and good for

three-quarters of its size without waste, or it was shorter than the standard length (twelve feet), or it was sap stained on one side, shaky, or the knots were coarse, and yet while it was not fit for the place of a sound common, it would answer for coarser purposes. When, however, it would not work one-half without waste, had a rotten or slivered end, was full of coarse wormholes, was black on both sides, was full of loose shake, and the knots were large, loose or rotten, it was a mill cull. Later practices have led to subdivisions of a still greater extent, and common now embraces only good sound lumber, fit for any coarse use where finishing grades are too expensive. Second common takes in coarser knots, some shake, heart boards when reasonably sound. Some yards make a "third common," which includes boards with loose black knots, considerable shake, ring rot streaks of light extent, some considerable wormholes, etc. This is further supplemented by some with fourth common, which is getting down so fine in the selection, that only those who make it have an idea of what the grade consists of. Last of all come the culls of such dealers, and if they are not refuse, worthless, we fail to comprehend what they are good for. But in cargo inspection we recognize only two grades, viz., shipping culls and mill culls. Common must be sound and fit for all common uses. Shipping culls are really coarse common. They must be reasonably sound, may have large knots, some wormholes, stained sap—if not too much so—may have a reasonable amount of end or edge shake, but must not be so shaky as to weaken the piece; large knots running from outside to heart, weakening the piece for ripping, a rotten edge streak, anything which prevents its being a good sound common, is a cull. When the defects are greater than described it is a mill cull, and there is no inspection description to be given to a mill cull, further than that it is a piece of lumber really too poor to ship, and yet having enough workable stock in it to enable it to be cut up into some of the coarser uses, usually with a good deal of waste. Such a line board as our correspondent describes, "a little too good for a mill cull and a little too rough for a shipping cull," should be called a mill cull every time in shipping. There will be a loss in handling, and the buyer should have the benefit of the doubt.

COMMON AND CULL FENCING.

DRY.

1st quality Fencing, 16 ft.....	\$15 50
1st quality, 12, 14, 18, 20 ft.....	15 50
1st quality Norway Fencing, 12, 14 and 16 ft....	15 00
No. 2 Fencing, 12, 14, 18 and 20 ft.....	13 00
No. 2 Fencing, 16 ft.....	13 00
No. 3 Fencing, all lengths.....	10 00
4 in. Common Fencing, 12 and 14 ft.....	13 00
4 in. Common Fencing, 16 ft.....	14 00
4 in. No. 2 Fencing, 12, 14 and 16 ft.....	12 00

Add to prices of Boards and Fencing, for dressing one side, \$1; two sides, \$1.50.

Fencing is always cut 6 inches or 4 inches wide. Strictly speaking, it is 16 feet long, because general custom demands that posts for a fence shall be set eight feet apart, so that 12 and 14 feet lengths, or any length except 16 feet, would properly be designated simply as "strips." Grading customs, however, have of late years admitted all lengths of strips to the designation of "fencing," because of the equally common custom of selecting the best of all lengths of strips for flooring purposes, in which, length is usually immaterial. First quality fencing is a good sound common, from which selections of C and D flooring are made, still leaving in 16 feet lengths that which is more knotty than is usually permissible in a good common floor, but of good grade for fencing purposes. Of this the best is selected again for "fencing flooring," which is usually of a better grade in other than 16 feet lengths than in the length suited for fencing.

A first quality of fencing should embrace good sound common lumber, without large loose knots, and with no rot. Shake, too, is to be avoided in this grade, although a slight end shake would not condemn, while bright sap is not usually considered a defect, although as a rule, all one side sap boards are thrown into "saps," flooring or bearded ceiling. First quality fencing is a No. 1 common, with which all are familiar.

Second quality fencing admits of a poorer quality of knot, but avoids any long knots running across the strip so as to weaken it for fencing purposes. Sap, even if discolored, is not rejected from this grade, while a heavy amount of broom shake, if not of a character to prevent the good holding of a nail, does not throw it out. Perhaps a simple statement that fencing should average better than wider lumber, will better convey the idea that a No. 2 strip is a better piece of lumber in its grade than is a No. 2 common board in wider widths,

but it remains that it is a grade which in inspection would be classed as a shipping cull, admitting worm holes, coarse knots, shake and unsound sap, if it is not too badly decayed so as to make a mill cull of the piece.

A few examples of No. 2 fencing may be added:

EXAMPLES.

Example 1.—A reasonably sound heart strip is somewhat shaky at both ends.

Example 2.—Has four large coarse knots and five dime knots, all showing through. One edge is wormy for four feet.

Example 3.—Heart shows gum streaks, inclined to rot for half the length; several small sound knots and two small rotten knots. One end is shaky for four feet; one edge shows a streak of bright sap. Sap side shows more tendency to rot about one of the knots; the gum streaks are sound. Sap on this side is two inches on one edge, the full length.

Example 4.—Very knotty, but knots are sound; timber is red from contact with rot in the log, for six feet from one end; otherwise would be a common.

Example 5.—Is a heart strip with several large, long coarse knots.

Example 6.—Is a heart strip with shaky heart on one side. Four feet from one end is a coarse knot crossing the board, but not deep enough in the surface to materially weaken it, but the piece is a liner with mill cull.

Example 7.—Has two large black knots, one size of a dollar, one of half dollar and several smaller. Is shaky one-third the length, shake showing on both sides.

Example 8.—Is a good piece to look at, but has a loose open shake for four feet from one end.

No 3 fencing is simply a pick from mill culls, and need not be further described. The difference in length in all grades of fencing needs no extended remarks, as the general rule applying to the descriptions of 16 foot lengths, apply equally well to all lengths.

PICKETS AND BATTENS.

Pickets, flat, common.....	\$10 00
Pickets, flat, rough, mill run.....	12 00
Pickets, fancy head and dressed, selected.....	18 00
Pickets, 1 ½ in. square, D. & H., selected.....	18 00
2 in. Battens, O. G. or beveled, per 100 lin. ft.....	45
2 ¼ " " " " "	55
2 ½ " " " " "	60
3 " " " " "	65

There are two kinds of pickets, the flat and the square. A picket as usually spoken of, is a piece of wood 4 feet in length, 3 inches in width, and 1 inch in thickness, and is supposed to be entirely free from knots, shake and rot, and while a trifle or trace of sap on one

edge would not condemn in the first grade, yet it may be broadly stated that sap is not allowed. In "common" pickets, sap to a small extent, and a small knot or two, are admissible. The standard of pickets is a perfect piece of wood. Square pickets are subject to the same rules, and these are usually cut $1\frac{1}{4}$, $1\frac{1}{2}$ and $1\frac{3}{4}$ inches square. Square pickets are sometimes cut but three feet in length.

Battens are narrow strips from 2 to 4 inches in width, usually about $2\frac{1}{2}$ and 3 inches, 1 inch thick, dressed to form $\frac{5}{8}$ to $\frac{7}{8}$ -inch thick, either flat, O G or beveled edges. In the nature of things battens are clear or nearly so, as their use is to batten cracks. They are seldom ripped from shaky, rotten or very knotty stock, as this would, generally speaking, unfit them for the intended use.

TIMBER JOIST AND SCANTLING.

	12 ft.	14 ft.	16 ft.	18 ft.	20 ft.	22 ft.	24 ft.
All 2 x 4.....	\$12 50	12 50	12 50	15 00	15 00	15 00	15 00
All 2 x 6.....	12 50	12 50	12 50	15 00	15 00	16 50	17 00
All 2 x 8.....	12 00	12 50	12 50	15 00	15 00	15 00	15 50
All 2 x 10.....	12 50	12 50	12 50	15 00	15 00	17 00	17 00
All 2 x 12.....	13 50	13 50	13 50	15 00	16 00	17 00	18 00
4 x 4 to 8 x 8.....	13 50	13 50	13 50	15 00	16 00	17 00	17 00

2 in. Cull Plank, promiscuous width.....\$10 00

2x4 Cull, 12, 14 and 16 ft..... 11 00

Three inch joists, and heavy timber, 8x10 and larger, extra, according to size.

Under this head we group what is usually denominated "dimension sizes." Timber usually comprises squares above 4x4. Scantling comprises 2x3, 2x4, 3x3, 3x4 and 4x4. Joist includes flats of two inches or more in thickness from 2x5 to 2x12 up to 3x16 and includes up to 4x20. When we get above such sizes, "timber" is the more appropriate appellation.

Timber can be made from logs which would give very inferior stock either in boards, scantling or joist. Large, coarse knots, if sound or reasonably so, will not injure in the larger sizes of timber, while the same knots in 2x4 to 5x5 or 6x6 would destroy the value of the stick. Rotten timber would not be admitted to a stick of first quality, nor, for that matter, in any size of timber, joist or scantling. Shake which would condemn in boards or small sizes of dimension, will not usually

condemn in the larger. In scantling and joist, knots must not be of a character to weaken the piece. No. 1 must be sound common, fit for the uses to which the size is adapted, but does not require to be of so fine a quality as in boards. Worm holes may be looked upon with less disfavor, but a large number of large black worm holes, especially in timber which had been killed while standing, and has lost its vitality, would materially affect its value, and in most sizes would cut the quality to a No. 2 or a mill cull. Sap in scantling is no detriment, but all sizes should be practically square edged. A small amount of wane on scantling or timber would not condemn. Timber joist and scantling are all intended in some way to bear weight, and the quality should be such as to fit it for weight bearing in the uses for which it is intended. A contract for "clear" timber should not be construed so literally as the same term would bear in boards. A clear board must be practically free from knots and all other defects, a clear timber of say 12x12 or 20x20 comes under the broad rule of inspection, that "defects may increase in proportion to the size of the piece." A timber 12x12 has twelve times the quantity of stock that a 1x12 has, and should be included under the designation of "clear," with a larger proportion of defects than the smaller piece. A contract to be otherwise construed, should specify "One, two, three or four sides to be *surface clear*." Without such specification no inspector would be warranted in condemning from clear a piece of timber showing several small knots on its faces. The same general rule would apply on joist. The same defects could not be permitted on a piece of 2x4 as on a 2x12. A contract for a lot of *first quality* timber should be construed as calling for a good quality of common only, while a black knot which would condemn in a board, would not condemn in a piece of timber. In inspection, terms are used relatively, not strictly, and when defects are allowed in narrow widths, they are maximum only to those widths, and may be of greater extent within reasonable limits as width and size increase. So also defects are allowable according to the use for which a piece is intended. A contract for road plank would not call for so close an inspection as a contract for the same size of material for a floor. No. 1 timber, joist and scantling should be good sound common, but may have coarser knots than in boards. By the consent of common custom, joist and scantling in the Chicago market are permitted to be manufactured

scant in thickness, or $1\frac{7}{8}$ inches in place of 2 inches in the rough. So also in boards and fencing of white and Norway pine, also of hemlock, preference is given to sawing which will leave the board a trifle scant of one inch thick when seasoned. Eastern markets have usually demanded plump thicknesses, but purchasers in Chicago market must not expect it as a rule.

SHINGLES.

Nothing is more subject to abuse in the lumber trade than the article of shingles. Being packed in close bunches, they are, to a degree, hidden from the close examination of the purchaser, who must rely more upon the representation of the dealer, or upon his knowledge of the brand, and the general reputation of the manufacturer of that brand, for honest packing, than upon any personal knowledge he can have of the quality of the shingle before opening the bunches. In the manufacture of shingles it is inevitable that the log stock should produce shingles of all grades, from perfect to worthless. It is therefore in the packing, where the good and bad are separated, and the character of the packing in the care exercised by the packers can alone determine the honesty of the grade. In this market little or no attention is paid to what are known as "bastard" cut shingles, which, in many Eastern markets, are not considered desirable. A shingle is four inches wide, whatever the thickness or length; 1,000 pieces, four inches wide, constitute a thousand. If each piece in a bunch were six inches wide, then each would be a shingle and a half, and it would require only 667 pieces (or 167 pieces to the bunch) to constitute a thousand. If all were eight inches wide, then each piece would figure as two shingles. In miscellaneous widths a buyer is entitled to the equivalent of 1,000 four-inch pieces. It is usual to pack shingles in bunches, twenty inches (or five shingles) wide, containing 250 shingles or a quarter thousand; this demands fifty courses in all, twenty-five on each side of the band. We are often inquired of regarding "dimension" shingles, which are usually packed short count. In answer to such inquiries we may say: Whatever the number of pieces in a bunch, the purchaser is entitled to so many as will equal 1,000 pieces four inches wide when he buys by the thousand. If the count falls short of this equivalent, the price should be, and usually is, made by the *bunch*, and not by the *thousand*. Shingles as a rule are sawed

on the standards of sixteen and eighteen inches for length. The sixteen-inch are almost exclusively used in this market, and the standard thickness is two inches to every five shingles, measuring at the butt. A *trifle* thinner than this is preferred. Eighteen-inch shingles are made upon a standard of five butts to $2\frac{1}{4}$ inches. The points should be 1-16 inch or less, but care should be taken to avoid "shims" or broken points. A code of rules by the Lumberman's Exchange has the force of a law of the State of Illinois as respects the different grades of shingles, the Exchange being an incorporated body, with especial power to define grades and appoint inspectors. The grades established by this legal authority are as follows:

SECTION 13 OF INSPECTION RULES

SHINGLES.

All pine and cedar shingles shall be not less than 16 inches in length, and $\frac{3}{8}$ inch thick at the butt, and shall be classed and known as follows:

The first grade is to be denominated Clear, and to consist of shingles not less than three inches in width; all to be absolutely perfect.

The second grade is to be denominated Extra A, usually branded *A*, and this shall consist of shingles not less than three inches wide, and with the butts clear for ten inches of the length.

The third grade is to be denominated Standard A, and to be not less than eight inches clear from the butt, and not less than three inches wide.

The fourth grade to be denominated as Shaded A, the shingles to be clear, for a distance of not less than five inches from the butt.

The fifth grade to be denominated No. 1, and to include everything poorer than Shaded A, but to be made of sound timber, with no unsound knots in the butt.

Culls are a quality manufactured from winding, worm eaten, shaky or dry rot timber, badly manufactured or less than sixteen inches in length.

It is recommended that one-fourth ($\frac{1}{4}$) M bunches be packed in bands twenty inches in length, with twenty-five courses; one-half ($\frac{1}{2}$) M bunches in twenty-five inch bands with forty courses. Shingles shall always be full count, and pay shall be collected only for the number of shingles actually delivered, regardless of the pretended number contained in each package or bundle; or in other words, there shall be exacted in every instance for 1,000 shingles the equivalent of 1,000 pieces four inches wide.

Eighteen inch shingles sold in the Chicago market would be subject to the same rules as regards grade, no difference being made except as regards length.

Care is demanded in the packing of shingles, not only that every shingle in the bunch is perfect in its respective grade, but that no

large holes should be left in the courses, and that the bunch be pressed solidly and secured by strong and durable bands of both wood and iron. Sheet iron bands soon rust and discolor the sides of the bunch, detracting from its appearance. Galvanized iron is liable to crack or disintegrate at the bend and become unreliable in a short time. Thin steel bands have been found stronger and less objectionable in these respects. The wooden band should be as light as is consistent with strength, and each end of the iron should be secured to the wood by two nails placed as near the end of both iron and wood as practicable. An especial nail is manufactured for this purpose.

SECTION 14 OF EXCHANGE RULES

LATH.

NUMBER ONE.—Should be 4 feet (no more, no less) in length, not less than three-eighths ($\frac{3}{8}$) of an inch thick, and one and one-half ($1\frac{1}{2}$) inches wide, free from shakes, rot, wane or worm holes.

NUMBER TWO.—Same length as No. 1, may be less than three-eighths ($\frac{3}{8}$) of an inch thick, and must be not less than one and one quarter ($1\frac{1}{4}$) inches wide, will admit of wane and worm holes not to exceed ten pieces in a bundle of 100.

CULLS—All that will not pass in above named qualities.

Outside the Rules of the Exchange and their requirements as regards width, there is a partial recognition accorded in the Chicago market to lath one inch in width but in length and thickness as prescribed in the rules. In the manufacture and packing of lath care should be taken to pack a full 50 or 100 pieces in each bundle (usually 50 or twenty bundles to the thousand) of perfectly uniform length, and uniform in thickness, well tied with tarred rope yarns.

BYRKIT-HALL LATH.

In connection with the lath trade, we may mention the Byrkit-Hall sheathing lath, which as a sheathing and lath combined in one, finds a not unimportant and increasing place in Western markets. This is made from 1-inch rough and cull strips, from 4 feet to 16 feet in length, with beveled plowing on one surface extending to half the depth of the board. These plowings are the width of half an inch on the face and $\frac{7}{8}$ inch on the bottom, and from $\frac{1}{2}$ inch to $\frac{5}{16}$ inch deep and are placed $1\frac{1}{4}$ inches apart, present-

ing all the advantages of the solidity of sheathing, combined with the firm holding of the V groove. In this lath the quality of the lumber need not be scrutinized, as anything which is sound enough to pass through the machines for surfacing and grooving, is adapted to the manufacture of this lath.

C SELECT, SAPS, "FARMER'S CLEAR."

There are several now well recognized yard grades which are not quoted in the Chicago price list. Among these we name

"SAP CLEAR."

This is a grade of narrow lumber, used extensively for the manufacture of moldings, and consists of outside boards of from four to ten inches in width, presenting one practically clear face. The sap side may be all sap, a *trifle* of which may run over on to the face. The sap may be somewhat discolored on the outside without condemning the piece, and if the face is bright and clear less attention will be paid to the density of the blackness on the sap side. This grade usually comes from the first board obtained after the slab has been taken from the log, where the face is wide enough to edge up heart wood. Shake condemns in this grade, as moldings demand sound timber.

A grade of "common" saps allows a large amount of shake when it is of a fine, close character, and takes in boards in which the sap covers both sides of the piece, and this will not require to be wholly free from discoloration, but must not be too badly discolored.

FARMER'S CLEAR

is not known in Chicago trade, but is not infrequently found in other localities. This consists of "saps," at points where no manufacture of moldings is carried on, and includes all narrow fair faced boards even where a considerable quantity of fine shake is present. It is a grade which as a rule, would class as mill cull in a shipping demand, but is well adapted to the uses of farmers or in that cheap class of country dwellings where surface appearance is not so closely scrutinized as in city use and yards.

"C SELECT" OR "SHOP,"

while finding no place in the price list quotations is a recognized and important grade in all wholesale markets. It is a "cutting up" grade,

and admits any piece of lumber, however coarse, in which not less than 50 per cent. of the piece can, by cutting between defects, be made to answer the purposes of clear or select. So a piece which would inspect mill cull in ordinary inspection, and in which the defects would exclude it from B select or even common grades, may be an excellent "C select." A large portion of what we have mentioned as "saps" would go into this grade because of the utility of one side in work where but one face is required. It is a grade in which oftentimes 90 per cent. of the board can be utilized while anything cutting 50 per cent. clear would be admitted.

While our description embraces the usual Chicago grading of shop common the C select of points further West includes only boards comparatively free from knots, but in which is found a larger or smaller proportion of shake which in the absence of knots cuts no figure. Blue sap on the face of the piece in amount proportioned to the width of the board, does not condemn. Much of what would be called good "shop" in Chicago yards would be objectionable in retail yards West where little facility exists for cutting up, and where coarse knot stock and other defects suited for cutting up, would be practically valueless.

· EXAMPLES.

Example 1.—Is a plank 12 feet long, $1\frac{1}{2}$ inches thick and 16 inches wide. Four feet from one end and near the center, is a knot-hole three inches in diameter. Seven feet from the end and four inches from the other edge is another large loose knot. These knots are so situated that a continuous clear strip could not be obtained but the cuttings between the knots would give fully 90 per cent. of the piece, suitable for the best uses to which the width and thickness is adapted in short lengths.

Example 2.—A 2 inch plank 16 feet long, 12 inches wide; three feet of one end is very shaky; four feet from the other end near the center is a large coarse black knot; 75 per cent. of this piece is clear cutting.

Example 3.—A 12 foot, $1\frac{1}{4}$ inch plank with a swallow tail rot extending for three feet from one end, rendering it useless for any purpose, a small knot appears two inches from one edge near the center of the length of the plank; the rest of the timber is clear.

Example 4.—Is a plank 14 feet in length and 14 inches wide, $1\frac{1}{2}$ inches thick; a loose heart extends two-thirds of the length of the piece, showing only on the heart side; from it diverge several V knots, not showing through. On the outside are one or two medium knots well scattered. Three inches ripped out of the center would leave two nice strips five or six inches wide with little defect in each.

Example 5.—Is 1x10-16 feet; heart is a nice side without knots. Four feet from one end on each edge a narrow bright sap begins, widening to 1 and 1½ inches, running out in a length of eight feet. On sap side two-thirds of the surface is discolored, sap covering the face for five feet of the center, tapering out to leave two meaty ends. One edge has a narrow wane for six feet.

Example 6.—Is 1x7-16 feet. Heart has three pin knots within ten inches of one end and two cluster knots 2 inches in diameter six feet from the other end. The sap side shows one knot at one end, at the other end the heart knots show in one case as two pins, in the other as a ¼ inch edge knot. In center of length, sap covers half of the width from both edges, leaving an irregular three inches of meat, the sap tapering to nothing at the ends; one edge has a little wane in center.

Example 7—1x8-16 feet; is a board which a novice would call clear, but an expert would find a fine tight (not shelly) shake on both sides for half its length.

Example 8—2x7-16 feet; one side is a broad sap, heart has a rot streak at one end 3 inches wide, 6 inches long, no other defect.

Example 9—2x20-14 feet. Heart has four well scattered large knots showing through. A narrow sap on sap side.

Example 10—2x14-16 feet; has eight sizeable knots showing on both sides but fairly in line on one edge and within six inches of edge, otherwise the piece is clear.

Example 11—1¼x12-16 feet; one full sap side. On heart, from full sap at one end for two feet, sap tapers along one edge irregularly from one to four inches the full length.

Example 12—1x16-18 feet. A clear bright board without knots. Heart side shows broom shake for two-thirds the length, going through to sap side, on which is a very narrow discolored sap four feet long in center of one edge.

Example 13—1x8-16 feet. Heart shows three small knots within three feet of one end, close to edge. At twelve feet from this end a punk knot size of a dollar shows through, with another knot the size of a quarter dollar on the edge. The wood is red but sound, except in the punk knot; one inch bright sap shows on one edge the full length.

LUMBER WEIGHT.

The following table shows the average weights obtained in the actual shipment from Chicago of 20,000,000 feet of pine lumber, during an entire season:

	POUNDS.
1, 1¼ and 1½ inch, surfaced one side.....	2,102
The same, surfaced two sides..	2,068
2-inch, surfaced one side.....	2,200
White pine flooring, dressed and matched.....	1,890
Hard pine flooring.....	2,366
Ship lap, 8 inch.....	1,711
Ship lap, 10 inch.....	1,725
Ship lap, 12 inch.....	1,855
White pine ¾-inch ceiling.....	786

POUNDS.

Hard pine, $\frac{3}{8}$ -inch ceiling.....	950
Siding.....	865
Piece stuff, rough.....	2,560
Piece stuff, surfaced one side, and one edge.....	2,210
Thin clear, surfaced one side.....	1,380
$\frac{5}{8}$ ceiling.....	1,120
Rough boards.....	2,524
Hard pine fencing.....	2,910
4-inch flooring, dressed and matched.....	1,793
6-inch fencing.....	2,433
Pine shingles.....	248
Cedar shingles.....	203
Dry lath.....	502

INSPECTION CHARGES.

The following table shows the customary charge for Measuring and Inspecting lumber in Chicago, by force of custom, not by legal enactment.

Straight measure or one kind.....	16 cents.
“ “ 2 kinds.....	18 “
Inspecting on dock 3 kinds or more.....	35 “
Lath per M.....	04 “
Shingles per M.....	02 “
Posts \$3.00 per M. Two cents additional for railroad or canal work.	

INSPECTING HARD WOOD

(AS ORDERED BY THE LUMBERMAN'S EXCHANGE.)

By rail per car.....	\$3 00
By cargo, or partial cargo per M.....	40

APPROXIMATE WEIGHTS OF CEDAR POSTS, PEELED.

	4		5		6		7		8	
	D	G	D	G	D	G	D	G	D	G
7 Foot.....	25	30	35	40	50	60	65	80	80	100
8 “.....	30	40	40	60	60	75	70	90	90	110
10 “.....	40	50	60	70	70	90	90	110	110	130
12 “.....	60	70	70	90	90	110	110	130	130	160
14 “.....	70	90	90	110	110	130	130	160	160	190
16 “.....	90	110	110	130	130	160	160	190	190	210
18 “.....	110	130	130	160	160	190	190	210	220	260
20 “.....	130	160	160	190	190	210	220	260	250	300
25 “.....	180	210	200	230	250	300	280	340	300	400
30 “.....	250	300	300	360	330	390	370	440	400	480
35 “.....	350	420	400	480	430	510	480	570	500	600
40 “.....	450	540	500	600	550	660	600	720	650	780
45 “.....	600	720	650	780	700	840	750	900	800	960
50 “.....	700	840	750	900	850	1020	900	1080	950	1140
55 “.....	850	1020	900	1080	1000	1200	1100	1320	1150	1380
60 “.....	900	1080	1100	1320	1150	1380	1250	1500	1300	1600

RULES FOR MEASURING AND INSPECTING

PINE LUMBER

OF THE

Lumberman's Exchange of Chicago, 1878-'82-'86.

SECTION 1.

First Clear White Pine Lumber shall not be less than twelve inches in width, and no imperfections allowed unless fourteen inches wide or upward; will then allow imperfections equal to *sap*, one inch on one side, extending the whole length of the piece, on pieces fourteen inches wide and well manufactured, but the face side must be perfect; as width increases will allow larger imperfections in proportion to the width, but not imperfections enough to decrease the value below the above described piece.

SECTION 2.

Second Clear White Pine Lumber shall not be less than eleven inches wide, and perfect up to eleven inches in width; will then allow imperfections equal to *sap*, one inch on each side of the whole length of the piece, if well manufactured; as width increases will allow other or larger imperfections in proportion to the width, but not imperfections enough to decrease the value below the above described piece.

SECTION 3.

Third Clear White Pine Lumber shall not be less than nine inches in width, and perfect up to ten inches; will then allow imperfections equal to *sap*, one inch on one side of the whole length of the piece if well manufactured. The imperfections in this quality shall not exceed *one hundred per cent.* over those allowed in *second clear*.

SECTION 4.

Select White Pine Lumber shall include all lumber of poorer quality than *third clear*, the imperfections of which shall not exceed *one hundred per cent.* over those allowed in *third clear*.

SECTION 5.

Clear White Pine Flooring shall be one inch thick, six inches wide, and no imperfections.

SECTION 6.

Second Clear White Pine Flooring shall be in thickness and width same as *clear flooring*, and will allow of one small *knot* or *sap* three-quarters ($\frac{3}{4}$) of an inch on one side, with clear face.

SECTION 7.

Common White Pine Flooring shall be of the width and thickness of *first and second clear flooring*, and may have three small sound *knots*, with *sap* one inch on one side, but if less than three *knots*, then *sap* equal to two inches on one side, and shall be free from rot, splits and shakes.

Four-inch flooring strips, equal in quality to *first and second clear flooring*, shall be classed as *common six inch flooring*.

SECTION 8.

Common Pine Lumber includes all boards, plank, joists, scantling, timber, fencing and four-inch strips, that are of a generally sound character, well manufactured, and not included in the foregoing qualities. Boards and planks should be square-edged, full thickness, and have no large loose *knots* or bad *shakes*. In wide boards, twelve inches and over, will allow a straight split one-sixth (1-6) the length of the piece, when otherwise sound. Fencing should be of good, sound character—pieces that will not break easily, six inches wide and one inch thick. Scantling, joists and timber should not have imperfections that would weaken the piece so that it cannot be used for substantial building purposes, and uniform in width and thickness. Timber should be measured at the small end, and, if much wane on the piece, reasonable allowance made for it.

Norway pine lumber shall be classed as *common* lumber, unless otherwise agreed upon.

Cargoes of piece stuff or timber containing over twenty-five per cent. Norway, shall not be considered standard, and all edge boards and inch lumber in cargoes of piece stuff, shall be subject to special agreement.

SECTION 9.

All badly stained white pine lumber, that is otherwise better than

common, shall be inspected into a lower grade than when bright and free from stain.

SECTION 10.

All lumber described in the foregoing Rules of Inspection shall be not less than one inch in thickness, and not less than twelve feet long.

SECTION 11.

Culls.—A quality that cannot be received into any of the foregoing; consisting of even lengths of ten feet and upward, and so imperfect as not fit for ordinary uses without waste.

Mill Culls.—Refuse lumber.

SECTION 12.

All cargoes sold under *straight measure* shall consist of lumber twelve feet and over; and where, by imperfection of manufacture, such lumber is reduced in grade so as not to answer the purpose for which it was intended, it shall be measured at only one-half ($\frac{1}{2}$) the amount in the piece for which it was intended. And all pieces containing auger holes, if fourteen feet in length and over, and bored only at the ends, shall be measured in full, excluding two feet in the length of the piece; if bored in the center it shall be measured for only one-half ($\frac{1}{2}$) the amount in the piece. All lumber less than twelve feet when no special contract has been made, shall be measured in even lengths. *Mill Culls* excluded in all cases. All boards and strips to be at least one inch thick; joists or scantling two or three inches thick.

SECTION 13.

SHINGLES.

All pine and cedar shingles shall be not less than sixteen inches in length, and three-eighths inch thick at the butt, and shall be classed and known as follows:

The first grade is to be denominated Clear, and to consist of shingles not less than three inches in width; all to be absolutely perfect.

The second grade is to be denominated Extra A, and this shall consist of shingles not less than three inches wide, and with the butts clear for ten inches of the length.

The third grade is to be denominated Standard A, and to be not less than eight inches clear from the butt, and not less than three inches wide.

The fourth grade to be denominated Shaded A, the shingles to be clear for a distance of not less than five inches from the butt.

The fifth grade to be denominated No. 1, and to include everything poorer than Shaded A, but to be made of sound timber, with no unsound knots in the butt.

Culls.—Are a quality manufactured from *winding*, *worm-eaten*, *shaky* or *dry-rot* timber, badly manufactured, or less than sixteen inches in length.

It is recommended that one-fourth (1-4) *M* bunches be packed in bands twenty inches in length, with twenty-five courses; one-half (1-2) *M* bunches in twenty-five inch bands with forty courses. Shingles shall always be full count, and pay shall be collected only for the number of shingles actually delivered, regardless of the pretended number contained in each package or bundle; or, in other words, there shall be exacted in every instance for one thousand shingles the equivalent of one thousand pieces four inches wide.

SECTION 14.

LATH.

Number One—Should be four feet (no more, no less) in length, not less than three-eighths ($\frac{3}{8}$) of an inch thick, and one and one-half ($1\frac{1}{2}$) inches wide, free from shakes, rot, wane, or worm holes.

Number Two—Same length as No. 1, may be less than three-eighths ($\frac{3}{8}$) of an inch thick, and must be not less than one and one-quarter ($1\frac{1}{4}$) inches wide, will admit of wane and worm-holes not to exceed ten pieces in a bundle of one hundred.

Culls—All that will not pass in the above named qualities.

INSTRUCTIONS TO INSPECTORS AND MEASURERS.

It is understood that where the term *strips* is used in the sale of cargoes, the said strips shall be six inches in width, unless otherwise specified. All tapering pieces of lumber to be measured one-third ($\frac{1}{3}$) the distance from the narrow end, when twelve inches and over in width at the center, and when less than twelve inches wide in center, to be measured at the narrow end; all lumber to be measured in even lengths (except culls), from twelve to thirty feet inclusive in length, and above that length timber shall be counted for what it will measure.

Culls commence ten feet in length and then measure the same as

other qualities. Manufacture should be taken in consideration in all qualities, and if badly manufactured should reduce the grade.

Pieces of lumber that have auger-holes near the ends should be measured for length between the holes, if twelve feet and over, and what it so measures to be called in its proper quality; if auger-holes in the center as well as at the ends, it should go into *culls*, and be measured full.

Inspectors and Measurers are instructed that the rule here given, as to width and thickness, is the standard width and thickness for merchantable lumber of each grade. But when some slight deviation, either in width or thickness, should occur by accidental manufacture, so long as it will not hinder the lumber from being used for the purpose for which it was intended, such lumber shall not be reduced in grade on account of such deviation—it being the purpose of the foregoing Rules of Inspection to grade lumber so that the grades sold on the Lumber Market and out of the yards, shall be the same.

Inspectors and Measurers inspecting or measuring any cargo of lumber shall have full control of the unloading of the lumber, so far as determining how fast the lumber shall be delivered off the vessel.

In no case shall *mill-culls* be considered a quality for the purpose of increasing the inspection fees.

Inspectors shall be required to draw six shingles from each end of each half thousand bunch, and three shingles from each end of each quarter thousand bunch, and to put their brand on each bunch.

After the Chief Inspector or Measurer has received his instructions from both buyer and seller, given together, no attention shall be paid to any different instruction or suggestion from either party, given singly.

When either Inspector or Measurer has been ordered on a cargo of lumber, and they should be delayed in doing the work, either from want of dock or any other cause that might have been avoided by either buyer or seller, then, and in that case, the actual damages arising from such delay shall be added to the fees for measuring or inspecting such lumber.

All Inspectors who inspect lumber by grades under the foregoing rules in this market, shall mark the quality upon all lumber so inspected when required.

Inspectors or Measurers shall call out in quantities of not over sixty

fect (in ordinary cases) and be answered back by their tallyman distinctly.

No journeyman Inspector or Measurer, or any other person licensed by the Lumberman's Exchange of Chicago, for the purpose of inspecting or measuring lumber, shall be directly or indirectly interested in the business of buying or selling lumber, either for himself or other parties; nor shall any one so licensed by this Exchange receive other than customary compensation for inspecting or measuring such lumber; and no person shall, directly or indirectly, offer to such journeyman Inspector or Measurer, or other person licensed by this Exchange, any sum of money or gratuity, other than the fees established by custom of the Chicago Lumber Market.

The Chief Inspectors shall keep the original tally sheets, with date, name of vessel, names of buyer and seller, and the names of Inspectors or Measurers, and tallymen, at their offices for at least one year, and the said tally-sheets shall at all times be accessible to any of the parties interested therein.

Chief Inspectors or Measurers are required to include the entire cargo in their certificates, including lumber, lath, shingles, posts, etc.

REVISED RULES

FOR THE

WHOLESALE INSPECTION BY CAR OR CARGO

OF

HARDWOOD LUMBER.

AS OFFICIALLY ADOPTED BY THE LUMBERMAN'S EXCHANGE OF
CHICAGO, 1885. REVISED JUNE 10, 1886. FINALLY
APPROVED AUGUST 12, 1886.

INSTRUCTIONS TO INSPECTORS.

Inspectors of lumber are not manufacturers, and must measure and inspect lumber *as they find it*, of full length and width (except as to wane, which must be measured out or inspected in a lower grade), making no allowance for the purpose of raising grade, unless so instructed by the buyer and seller.

In Hardwood Inspection, the Inspector is instructed to use his best judgment, based upon the general rules laid down for his guidance. The standard knot is to be considered as not exceeding $1\frac{1}{4}$ inches in diameter, and of a sound character. Splits are always of a greater or less damage to a piece of hardwood lumber, and allowance must be made either in determining the quality or quantity, according to the nature of the defect. A split extending to exceed one foot will reduce a piece to one grade lower. All hardwood lumber should be sawed 1-16 inch plump. Thin lumber is not considered marketable. No cull is considered as having a marketable value which will not work one-half its size without waste. Lumber sawed for specific purposes, as axles, bolsters, reaches, harrow timber, newels, balusters, etc., must be inspected with a view to the adaptability of the piece for the intended use, as in many cases it cannot

be utilized for other purposes. In the inspection of combined grades of Firsts and Seconds, an undue predominance of Seconds should always be judiciously ascertained, as the purchaser is entitled to the full average in quality, based upon the average mill run of the kind of timber involved. Standard lengths are always recognized as being 12, 14 and 16 feet. Shorter than 12 feet does not come within the range of marketable, although sometimes admitted. In Black Walnut and Cherry an exception is made, and 10 foot is recognized as a standard length; shorter than standard lengths, in all varieties of hardwood lumber, are to be reduced one grade in quality. Mill Culls are never recognized as marketable, and all culls which will not work to the use for which the timber or the size is applicable, without wasting more than one-half, is a Mill Cull of no recognized value.

Flooring is always understood to be 4 and 6 inches in width, and 1 or $1\frac{1}{4}$ inches thick; other widths and thicknesses would be designated as special sizes.

(Hickory never should be cut while the sap is rising, as it is then liable to powder post, and indications of deterioration of this character should be carefully scrutinized.)

Newels from all kinds of timber must be cut outside the heart, to square 5, 6, 7, 8, 9, and 10 inches when seasoned; the lengths must be 4 feet (full) or the multiples thereof.

Balusters must be cut exactly square— $1\frac{1}{2} \times 1\frac{1}{2}$, 2×2 , $2\frac{1}{2} \times 2\frac{1}{2}$, 3×3 , and 4×4 . Lengths must be 32 inches. Table legs may be 28 and 30 inches.

Black Walnut Counter Tops must be 12, 14, 16, or 18 feet long, 1, $1\frac{1}{4}$, $1\frac{1}{2}$, and 2 inches thick, and the width must not be less than 20 inches.

Bolsters must be 4 feet, and 4 feet 6 inches, or the multiples thereof, in length, and the size must be 3×4 , $3\frac{1}{2} \times 4\frac{1}{2}$, $3\frac{1}{2} \times 5$, and 4×5 .

Reaches must be 2×4 and $2\frac{1}{2} \times 4\frac{1}{2}$, and the lengths 8, 10, and 12 feet.

Harrow timber must be $2\frac{1}{2} \times 2\frac{1}{2}$ and 3×3 , and the lengths 5, 10, 12, and 14 feet.

Hickory Axles must be clear, and in lengths of 6 and 12 feet, for sizes $3\frac{1}{2} \times 4\frac{1}{2}$, 4×5 , 4×6 , and $4\frac{1}{2} \times 6$, and 7 and 14 feet for 5×6 and

5x7 on special order, all cut from tough butt logs ; brash timber is excluded.

Ash Wagon Tongues must be clear, and 2x4 and $2\frac{1}{2}\times 4\frac{1}{2}$ at one end, by 4x4 and $4\frac{1}{2}\times 4\frac{1}{2}$ at the other end, 12 feet long, and from tough timber.

Thicknesses shall be recognized at 1, $1\frac{1}{4}$, $1\frac{1}{2}$, 2, $2\frac{1}{2}$, 3, 4, and 5 inches in all classes of hardwood boards and plank.

When lumber is sold in this market to be measured Merchantable (sometimes erroneously called "Workable"), the Inspector must measure full, except in culls, which are to be measured at one-half.

It is important that all lumber should be parallel in width, square-edged, and with square ends. Taper lumber shall be measured at the small end, ordinary season checks are not considered a defect.

In Poplar and Whitewood, marketable thicknesses should be recognized at $\frac{5}{8}$, 1, $1\frac{1}{4}$; $1\frac{1}{2}$, 2, $2\frac{1}{2}$, 3 and 4 inches ; $\frac{1}{2}$, $\frac{3}{4}$, 5 and 6 inches are classed as special sizes. When squared, the sizes shall be 4x4, 5x5, 6x6, 7x7, 8x8, 9x9, 10x10, and should be sawed $\frac{1}{8}$ inch plump.

Black Stains, Black Specks, and Worm Holes are considered serious defects in hardwood lumber, usually reducing to grades lower.

By "Log run" is always understood the unpicked run of the logs, Mill Cull out.

POPLAR, ALSO WHITEWOOD.

Inspection grades shall include Firsts and Seconds combined ; Selects, Common and Cull.

Firsts and Seconds must be 10 inches or more in width, and free from all defects up to 12 inches. At 12 inches one standard knot and two inches of bright sap may be allowed, at 14 inches, two knots and four inches of bright sap. Defects may increase in proportion to the size of the piece.

Selects include widths from 6 inches upward, free from defects to 8 inches, but at 8 inches may have one, and at 10 inches two standard knots. Defects may increase with the size of the piece in proportion.

Bright sap shall not be considered a defect.

Common shall include all sound lumber not less than 6 inches in width, not included in the former grades. Bright or slightly discolored sap is allowed, but black knots shall be excluded. In this grade not less than seven-eighths of the piece must be workable without waste.

Culls shall comprise all widths and sizes below the description of common, in which not less than one-half the piece is available to work without waste,

Box Boards shall be 12, 14, and 16 feet long, from 13 to 17 inches wide, free from all defects except bright sap for one-third of their width. (See instructions.)

WHITE ASH, ALSO BLACK ASH.

The inspection grades shall consist of Firsts and Seconds, Common and Culls. Sap shall not be considered a defect if bright and in good condition.

Firsts and Seconds must be 6 inches wide and over, but clear up to 8 inches; at 8 inches defects may be allowed equivalent to one standard knot, and at 10 inches two knots, and an allowance of more defects may be made in proportion to increased width. Must be free from hearts and dry rot.

Common shall include all widths 5 inches and over. At 6 inches one standard knot may be allowed, at 8 inches two knots. Defects may increase in proportion to the size of the piece.

Culls include all defective lumber—heart shake, knots beyond standard, and defective sawing.

Wagon Tongues must be clear, cut from tough timber, straight and free from all defects.

Flooring strips must have one face and two edges clear. (See instructions.)

OAK.

Shall be inspected as Clear, Second Clear, Common and Culls.

Clear must be 8 inches wide and over, free from all defects.

Second Clear must be 6 inches wide or over; at 8 inches wide will allow one standard knot, at 10 inches two knots. No other defects shall be allowed in this grade, but their extent may increase with the size of the piece. Bright sap is not considered a defect.

A combined grade of Firsts and Seconds must not comprise more than $66\frac{2}{3}$ per cent. of Seconds.

Common must be free from heart shake, but thick plank may contain sound hearts, if well boxed. All knots must be sound. Culls consist of bad heart plank, wormy or generally unsound lumber.

Flooring must have one face and two edges clear.

Wagon Stock must be of sound and tough timber.

Oak timber must be sound in all respects ; sound hearts not showing on the outside of the stick, shall not be considered defects. (See instructions.)

HICKORY.

Hickory shall be classed as Boards, Plank and Axles. Boards and Plank shall be inspected in Firsts and Seconds in one grade, and must not be less than 6 inches wide ; at 8 inches may have one standard knot, at 10 inches two, or bright sap, but no other imperfections. Defects may increase with size of piece.

Axles and reaches must be clear and of tough timber.

Culls include all lumber not up to the preceding description. (See instructions.)

BLACK WALNUT AND BUTTERNUT.

Counter Tops must be strictly clear.

Black Walnut and Butternut shall be inspected in grades, Firsts, Seconds, Common and Culls.

Firsts shall not be less than 8 inches wide, and must be free from all defects.

Seconds shall not be less than 6 inches wide, *at 8 inches* may have a little sap or one standard knot, *at 10 inches two knots*. Sap on the face side shall be measured out. Defects may increase with the width in proportion.

A combined grade of Firsts and Seconds shall not embrace a larger proportion than 75 per cent. of Seconds.

Common shall include all lumber not up to the standard of Seconds, but available a full three-fourths of its size for use without waste, free of hearts.

Culls shall include any width not good enough for Common, in which not less than one-half the piece is fit for use without waste.

Flooring must have one face and two edges clear, and may be included in the combined grade. Newels and Balusters must be free from all defects. (See instructions.)

CHERRY.

Cherry Counter Tops must be strictly clear.

Cherry shall be inspected in a combined grade of Firsts and Seconds, Common and Culls.

The combined grade of Firsts and Seconds shall include lumber not less than 6 inches in width, at 8 inches may have a little sap or one standard knot, at 10 inches more sap or two knots. Sap on the face side shall be measured out. Defects may increase with the width in proportion.

(NOTE.—Gum spots are considered a serious defect, and when the damage exceeds one-sixth of the dimension of the piece, shall reduce to the grade of Common. When the injury exceeds one-third the size of the piece, it shall be reduced to Cull.)

Common includes all lumber not up to the standard of the combined grade of Firsts and Seconds, but available a full three fourths of its size for use, without waste, free from hearts.

Culls include all lumber not up to the standard of Common, in which not less than one-half the piece is fit for use without waste.

Flooring must have one face and two edges clear.

Newels and Balusters must be free from all defects. (See instructions.)

CHESTNUT.

Chestnut shall be inspected in Firsts and Seconds and Culls.

Firsts and Seconds must not be less than 6 inches wide, and clear up to 8 inches, but at 8 inches may have one inch of sap or two standard knots. Sap on the face side shall be measured out. Defects may increase with the width in proportion. Wormholes are absolutely excluded from this grade.

Culls include all lumber not up to the standard of Seconds, but available not less than one-half to work without waste.

GUM.

Gum shall be inspected in a combined grade of Firsts and Seconds ; Common and Cull.

Firsts and Seconds shall include all lumber not less than 8 inches wide, at 8 inches one standard knot may be allowed, at 10 inches two knots, or a narrow sap not exceeding two inches. Defects may increase with the width in proportion.

Common includes all lumber not up to the standard of the combined grade, but available a full three-quarters of its size without waste, free from hearts. Clear sap pieces may be included in this grade.

Culls include all lumber not up to the standard of common, in which not less than one-half the piece is available without waste.

HARD AND SOFT MAPLE.

Maple shall be inspected in a combined grade of Firsts and Seconds, Common and Cull.

Firsts and Seconds include all widths, 8 inches and upward, and to 10 inches must be free from all defects; at 10 inches one standard knot, and at 12 inches two knots may be allowed. Stains are a serious defect, lowering one grade or more. (Natural color is not a defect.)

Common includes sound lumber 6 inches and upward in width, and may have defects not injuring the piece for ordinary uses without waste; a 6 inch piece may have one standard knot; at 8 inches two knots. Defects may increase with the width in proportion, but all lumber must be sound.

Culls shall include all heart shake, badly sawed or otherwise defective lumber, unfitting the piece for Common, but in which one-half the price is available for use without waste.

Clear flooring must have one face and two edges clear.

Common Flooring shall be of the same size and general character as Clear, but may have one or two small sound knots of not more than three-fourths inch in diameter, or a small wane on one edge, which will not injure it for working its full size without waste.

BASSWOOD AND COTTON WOOD.

Bass Wood and Cotton Wood shall be inspected in a combined grade of Firsts and Seconds, Common and Cull.

Firsts and Seconds shall be 8 inches wide, and clear up to 10 inches; at 10 inches one standard knot may be allowed; at 12 inches two knots. Defects may increase with the size of the piece in proportion. Bright sap shall not be considered a defect.

Common shall include any width not less than 6 inches, and at 6 inches one standard knot may be allowed; at 8 inches two knots. Defects may increase with the width in proportion, but all lumber

must be sound. *Slightly* discolored sap may be allowed in this grade.

Culls include all widths and sizes having more defects than described in common, whether in the number or character of knots black stain, badly checked, or other defects, but in which at least one-half the piece can be used without waste. (See instructions.)

BIRCH.

Birch shall be inspected in a combined grade of Firsts and Seconds, Common and Cull.

The combined grades of Firsts and Seconds includes all lumber not less than 7 inches in width, free from all defects, except that at 8 inches one standard knot may be allowed; at 10 inches two knots. Defects may increase with the width in proportion. Bright sap in Birch is not to be considered a defect.

Common includes sound lumber 6 inches and upward in width, and may have defects not injuring the piece for ordinary uses without waste. This grade will admit of standard knots, according to width, but no shake.

Cull includes all lumber not up to the standard of Common, in which not less than one-half the piece is available for use without waste.

HICKORY ELM.

Shall be classed as Firsts and Seconds combined; Common and Cull.

Firsts and Seconds must not be less than 6 inches wide; at 8 inches may have one standard knot, at 10 inches two knots or bright sap, but no other imperfection. Bright sap is not to be considered a defect.

Defects may increase with size of piece in proportion.

Common includes all sound lumber 6 inches and upward in width, not good enough for the preceding grade, and may have defects not injuring the piece for ordinary use without waste.

Cull includes defective lumber in which not less than $\frac{1}{2}$ the piece is available for use without waste.

SOFT ELM, SYCAMORE AND BEECH.

These woods shall be inspected in grades of Common and Better, and Culls.

Common and Better includes all sound lumber, free from shake and heart.

Standard knots from one to five in number (according to the size of the piece) do not condemn in this grade.

Culls include all lumber not good enough for the preceding grade, but in which one-half the piece will work without waste.

SOUTHERN OR YELLOW PINE.

Shall be inspected as Clear, Second Clear, Common and Cull.

Clear must be 10 inches or more in width, and be free from all defects.

Second Clear must be 8 inches or more in width. Narrow bright sap on the face side shall not be called a defect if the face is otherwise clear. This grade may allow of one or two small sound knots not over three-fourths inch in diameter showing through, if free from other defects. The facing being clear, one narrow wane, measured inside the bark, or one inch of blue sap may be allowed.

The combined grade of First and Second Clear must not embrace a larger proportion than 50 per cent. of the Seconds.

Common shall include all lumber poorer than that described as Seconds, but free from shake, large, unsound knots, rot or lumber of less than standard thickness.

Culls include all large unsound knots or shake, and all unsound lumber which will work one-half without waste.

Clear flooring must have one face end two edges clear. Bright sap is allowable, but discolored or blue sap is excluded.

Common Flooring shall be of the same size and general character as clear, but may have two or three small sound knots of not more than three-fourths inch in diameter or a small wane on one edge which will not injure it for working its full size without waste.

Step Plank, First and Second Clear, must not be less than 12 inches wide and $1\frac{1}{2}$ and 2 inches thick; free from all defects on one side, except two inches of bright sap. (See instructions.)

CYPRESS.

Boards and Planks shall be in lengths of 12, 14, or 16 feet, 1, $1\frac{1}{4}$, $1\frac{1}{2}$, 2, $2\frac{1}{2}$, 3, $3\frac{1}{2}$, or 4 inches thick, and be classed as Clear, Second Clear, Common and Cull.

Clear shall be ten inches and over in width, and free from all de-

fects. Second Clear shall be 8 inches and over and clear up to 10 inches; at 10 inches and over may have two standard knots and three inches of bright sap. Free of other defects, may be one-half bright sap. Clear and Second Clear may be combined as one grade and must be free from shakes or pecks.

Common includes all sound lumber under Second Clear, but must work up full size without waste and be free from hearts.

Cull shall comprise all unsound lumber that is available one-half without waste.

Shakes and pecks are always a damage in Cypress, and should be closely scrutinized.

Flooring strips must have one face and two edges free from all defects, must be 12, 14, or 16 feet long, 1 inch thick by 6 inches wide, unless otherwise ordered.

Common, see Yellow Pine.

Cull all unsound pieces available one-half without waste.

RED CEDAR.

Boards must be sound and sawed to thickness ordered.

Posts may be quartered or squared (hewn or sawed), and 7 or 8 feet long. Quartered posts must have two faces, sawed 4 inches wide at top or small end, and be straight and sound. Square posts and dimension lumber must be sawed to sizes ordered.

NOTE.—Reference should be made to instructions under head of "To Inspectors," and general rules at beginning, for all kinds, and in case of maple, ash, etc., hard or soft, black or white, must be kept separate. In judging of defects, due regard should be had to the uses to which the particular kind of lumber is applied, as in wagon poles, when a perfect stick, otherwise, may be unfit for use because brash or cross grained, therefore a cull.

GRADES OF SASH, DOORS AND BLINDS,

ADOPTED BY THE WHOLESALE SASH, DOOR AND BLIND MANUFACTURERS' ASSOCIATION OF THE NORTHWEST,
NOVEMBER 16, 1887.

DOORS.

No. 1 Doors.—Workmanship on No. 1 doors must be good. Stiles, rails and panels must be clear, except that white sap and water stain caused by cross-piling lumber is admitted, and small pin knots not exceeding one-fourth ($\frac{1}{4}$) inch in diameter may be allowed. The Standard No. 1 door shall be pinned and the wedges glued.

No. 2 Doors.—No. 2 doors may contain knots not larger than one (1) inch in diameter, and may contain blue sap on two (2) sides, and may contain gum spots showing on one (1) side. Other small defects may be allowed, but the total number of defects (not including blue sap), shall not exceed ten (10) in number on each side, and blue sap must not exceed fifty (50) per cent. of any piece of the door. Workmanship must be good, though slight defects therein may be allowed where the quality averages fair. Shaky lumber shall not be admitted. No part of a No. 2 door, except the top rail, short muntins and short panels shall be free from some defect.

No. 3 Doors.—No. 3 doors may contain double the amount of defects that are allowed in No. 2, and the knots and other defects may be coarser. Worm eaten lumber may be admitted if showing on one side only. Workmanship may be defective, but not enough so to destroy the strength of the door.

WINDOWS.

Check Rail Windows may contain not to exceed two (2) knots in each piece of the sash, said knots not to exceed three-eighths ($\frac{3}{8}$) inch in diameter. White sap and a small amount of blue sap may be admitted. Workmanship must be good.

Plain Rail Sash may contain blue sap and (small) knots. Shaky lumber not admissible.

BLINDS.

Outside Blinds must be made of clear lumber, except that small pin knots in the stiles and rails, and white sap may be admitted. Shaky lumber is not admitted. Workmanship must be good.

HOW TO ORDER.

Doors.—In ordering be particular to give quality desired (1st or 2d), thickness and number of panels.

Moulded Doors.—State whether to be moulded one or two sides, and whether raised or flush mouldings.

Sash.—Give size of glass, number of lights in window, number in width, thickness, whether plain or check rail, and whether glazed or unglazed.

Segment Head Sash.—If frames are made give radius to inside edge or face casing of window frame, or rise of casing.

Elliptic Head Sash.—If frames are made, send a pattern of head casing.

Elliptic Segment and Circle Sash.—Be sure to state whether the windows are finished square inside, or the same shape inside as outside.

Outside Blinds.—Describe the windows for which they are intended, following the directions for ordering sash. If frames are made, give exact size of opening.

Frames.—Give width of jambs for frame buildings, and thickness of wall for brick buildings. For door frames, state if outside or inside frame. For windows, state if plain or check rail, with or without pulleys.

Inside Blinds.—Give exact size of opening, size and number of lights in windows, distance from top of window to center of meeting rail of sash, or to where the blinds are to be cut; number of folds, whether to be all slats or outside folds paneled; if to fold in pockets give outside width of fold.

Be explicit, tell just what you want as near as you can. A drop of ink and an extra line on the paper, don't cost as much as delay, or a misunderstanding of your wants.

Conform to regular sizes and styles as far as possible. It pays in ordering special work, to give sections and elevations.

In giving sizes, name width first.

A "window" indicates two pieces.

A "sash" indicates one piece.

A "blind" indicates one piece.

A "pair of blinds" indicates two pieces.

A "set" of sash or blinds indicates more than two pieces, and elevation should accompany order.

Any manufacturer of sash, doors and blinds will supply you with an illustrated catalogue of designs, sizes, prices, etc.

CEDAR POSTS AND PAVING.

Cedar fence posts are cut 7 to 8 feet long, and are expected to be reasonably straight, while a small bow in the length will not condemn. They must be reasonably sound, but a small rot in the heart of a *large* post would be allowed. Nothing smaller than 4 inches at the top end would be counted as a post, and in a miscellaneous cargo the average of large and small should not be less than 7 inches. They are usually bought as to *average* size, but in the yard trade are sold as to individual size, so that while a cargo may be lumped at a price for large and small, the retailer or jobber would dispose of them at a price for each size separate. Punk knots, heavy crooks, or large rots will cull in posts.

PAVING POSTS.

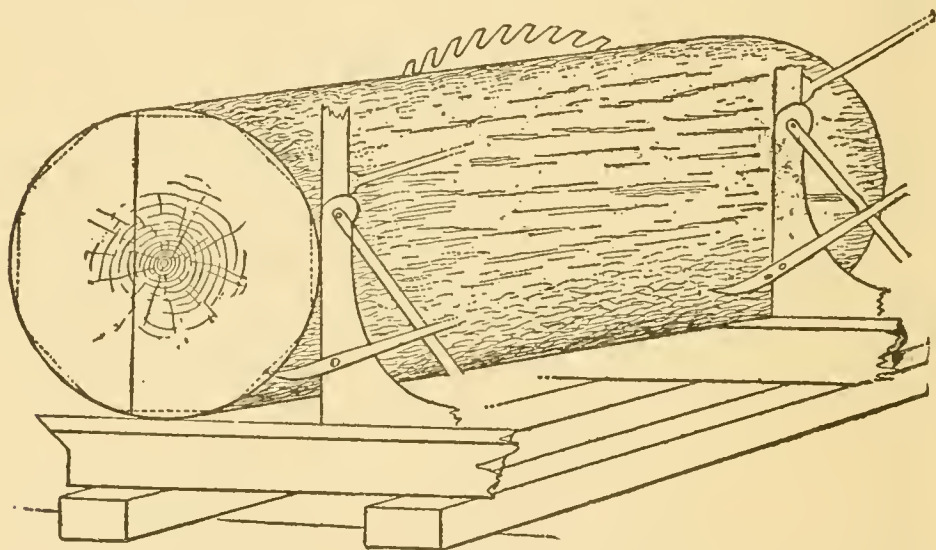
Cedar paving posts must be peeled, and of perfectly sound, live timber; defects which would pass in fence posts will condemn in paving stock, which is usually cut into 5 and 6 inch lengths, and in their intended use must be perfectly sound. Paving posts should be 8 feet long, and not less than 5 inches at the top end. If but 7½ feet long the price reduces about one-eighth, if 9 feet, one-eighth is added.

RAILROAD TIES.

A railroad tie, whether of cedar, oak or hemlock, must be reasonably sound, 8 feet in length, 6 inches thick, and with a face of not less than 6 inches. A lot of ties should average 8 inches. It is not so important that the stick should be straight, if the sweep is not too sudden. Care is demanded, however, that they should be smoothly hewed, of uniform length, and square on the ends.

QUARTER SAWING.

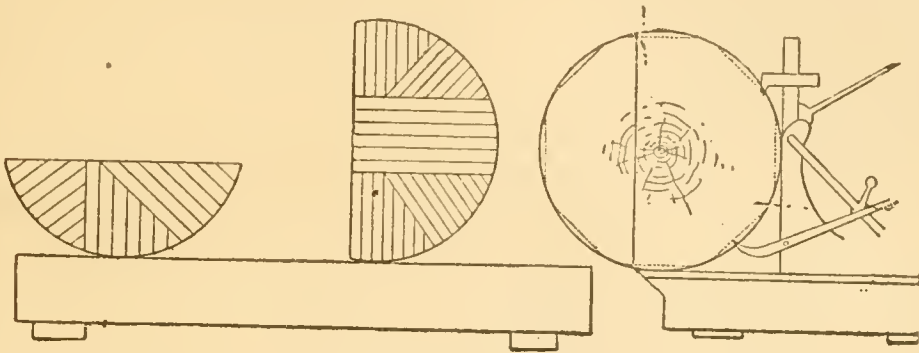
So much interest has of late been elicited in the question of quarter sawing, and opinions are so diverse as to the proper and most economical way of obtaining the best results from the smallest waste of timber, that any practical hints upon the subject cannot fail to be of benefit to our readers. We have therefore been at considerable pains and expense to give our readers the views gathered from practical sources, of men who from an extended experience in the manufacture of quarter sawed stock, are presumably competent to speak upon the subject. As these opinions are illustrated by cuts the reader will have no difficulty in determining which of the methods presents the most profitable and economical product. The first demand is to obtain lumber sawed *from the sap to the heart*. Second, to obtain this as wide as possible. Third, with a minimum of waste. Any method which attains the first result at the expense of the second, and espe-



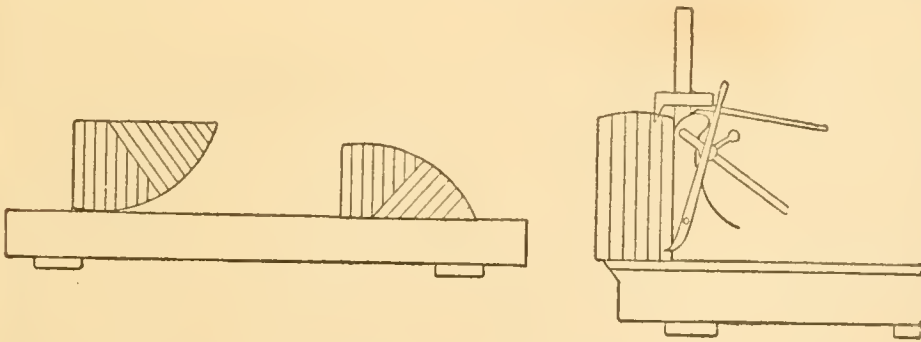
cially of the third, cannot be profitable to the manufacturer. From a manufacturer in Indiana whose quarter sawed oak is among the widest and best stock sold in the Chicago market, and therefore commands the highest price, we are favored with the following diagrams showing his method of manufacture. He first illustrates the rough log upon the carriage, showing the top of the saw in its progress through the cut, and says:

“It is a good plan to take off four or eight slabs, as this provides a flat surface for the head block, in nearly all the subsequent manipula-

tions. As we have an under dog with which we can hold a segment of the log in any desired position, *we* usually take but the four slabs at first. Let me say here, no sawyer can quarter saw lumber successfully with the old-fashioned dog. He should have a 'Crancy' or 'Knight,' and if he has no under dog he will find the eight-slab method by far the best, bringing the log as nearly to octagon as possible. Then split *near* the heart, as shown in diagram, laying off the



smaller half upon the roll-way skids. Then turn the large half down and take off a section as shown in diagram, which is also thrown upon the skids, and saw up the wide cu's of the log so long as a proper figure can be obtained, when the balance of the section is thrown on

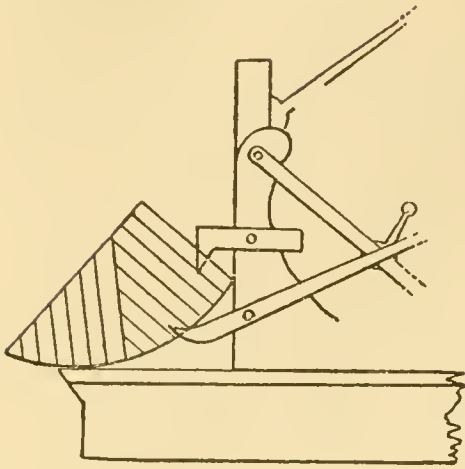


its back and sawed from the corner to the widest part of the quarter, when, again turning with flat side to the knee commence on the corner and finish up. The other sections are then placed on the carriage and the same course pursued with them.

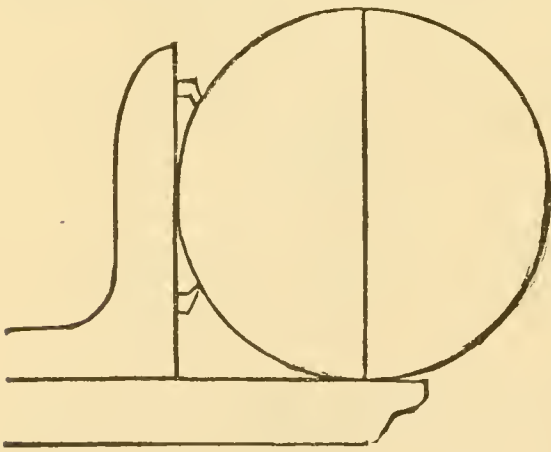
"I do not find it profitable to use logs less than 26 inches in diameter for quarter sawing, and prefer those of 30 inches or more, the largest we can get."

In November of 1886 the *Southern Lumberman*, of Nashville, treated upon this subject, and through the courtesy of its gentle-

manly managers we are enabled to reproduce their article with its illustrations.



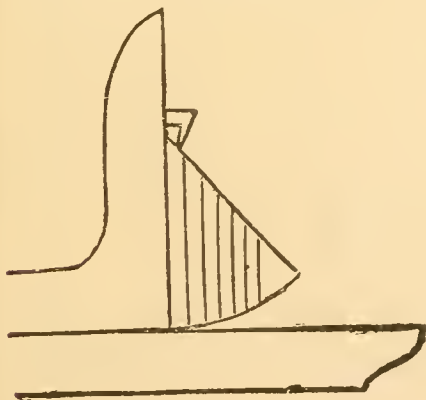
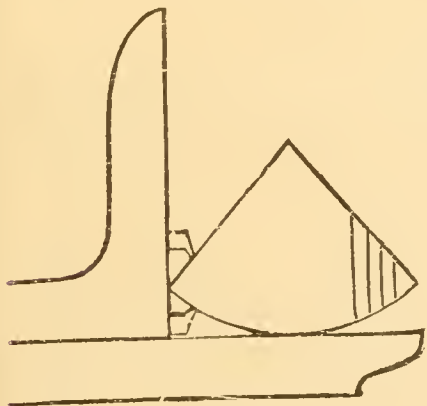
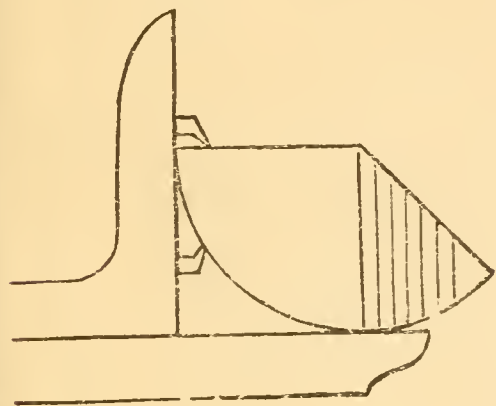
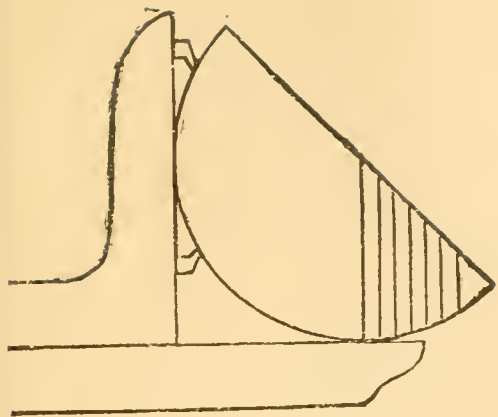
and other Southern hardwoods for interior finish, for panels, furniture and many other uses. It is one of the most sensible fashions ever started, because it is a well-known fact that the greatest shrinkage in any lumber is in the direction of the periphery, or circumference of the tree, and the least shrinkage and slightest warping is in a line "with the grain" from the bark to the heart of the tree. To cut



lumber as nearly like clapboards or staves are riven, with the least possible loss of timber, is the object of "quarter sawing." The most desirable feature is to secure clearness and width. None but the best logs 14 or 16 feet should be cut if the highest prices are expected. The width should never be under five inches, and the wider it is the better. All boards should be cut "full," so as to dry up to full thickness. The best thickness is 1 inch to 2½ inches. Thick lumber commands \$3 to \$4 per thousand more than boards, but the demand is yet limited for thick stuff, and it requires more time to season. Our experience is that it is better to dry quartered oak before trimming off the bevel edge and the sap, as this plan gives a more perfect board, but it costs more, and some good mill men differ with us

Within the past few years there has sprung up quite a brisk demand for "quarter-sawed" lumber. This demand is based mostly on the fact that lumber of any kind cut in this manner shrinks less and warps less than that sawed in the usual manner, and is really more valuable for nearly all purposes, but its popularity is also due, in some measure, to the fashion that is gaining prevalence for figured oak

possible loss of timber, is the object of "quarter sawing." The most desirable feature is to secure clearness and width. None but the best logs 14 or 16 feet should be cut if the highest prices are expected. The width should never be under five inches, and the wider it is the better. All boards should be cut "full," so as to dry up to



The diagrams given on this sheet are exact engravings from the rough pencil sketches sent us by practical sawmill men, and the descriptions are given in their own language.

The plan mostly used by the band mills in this city is that of Mr. J. D. Allen, superintendent of Levi Langham's mills in this city. It is best to have lower dogs, but not absolutely necessary, as we have seen good work done by using wedges on the head-blocks. Following are the best known plans for cutting quarter stuff:

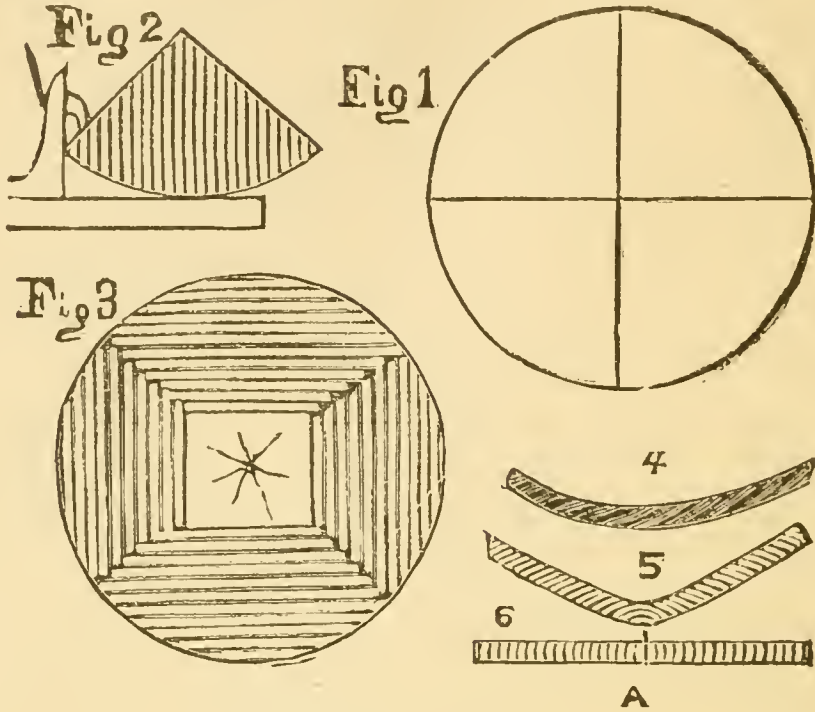
J. D. ALLEN, NASHVILLE, TENN.

First cut, halving the log. Second cut, an eighth into boards. Third cut, another eighth into boards. Fourth cut, another eighth into boards. Fifth cut, another eighth into boards. The other half of the log is cut in the same manner.

DAVID G. GREEN, BELLEFONTAINE, O.

Fig. 1 shows a log full and the way it should be quartered. Fig. 2 shows a quarter on block and the way it should be sawed for "quarter sawed." Fig. 3 shows a log cut the way it should be sawed to get "grain-sawed" lumber. Fig. 4 shows a grain-sawed board and the

- way it would warp. Fig. 5 shows a board warped at the center only, "which illustrates itself." Fig. 6 shows a board sawed directly through the heart. It will not warp, but will burst open at A; it



GREEN'S METHOD.

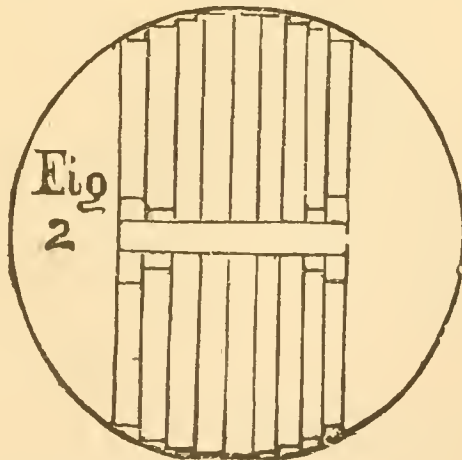
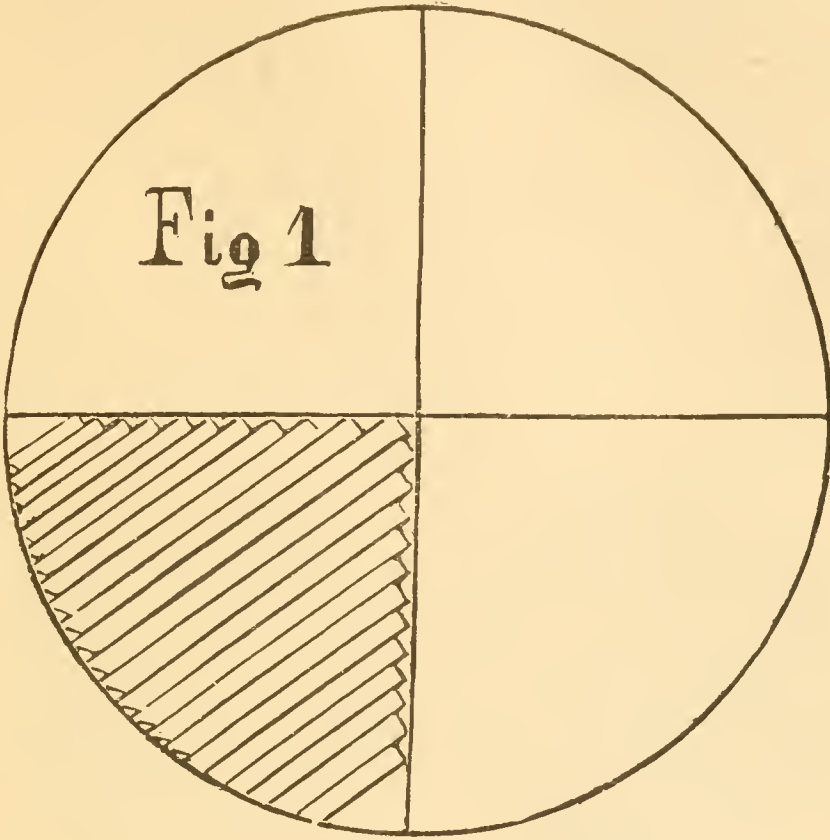
will not shrink in width, but will get thinner. It will warp in the direction of the bark. That is why quarter sawed lumber should never be edged up until it is seasoned.

M. C. ADAMS, ELLETTSVILLE, IND.

Fig. 1 represents a log that is quartered by sawing through the center first, and then splitting the halves in center. Lay quarter on blocks with bark side down and saw it as represented in the drawing. The object of "quartering" is to show the grain of the timber, and I think this way the best. Fig. 2 represents a log that is too small to quarter. The part that is not lined off may be sawed as the sawyer may wish, the balance if sawed as represented in drawing, will sell as "quartered" lumber, for it is plain to be seen that it will show the grain or figure as well as if the log had been quartered.

T. M. & J. C. DICKSON, INDIANAPOLIS, IND.

We notice in your issue of Oct. 1, you wish ideas in regard to quarter sawed oak. We inclose you a diagram showing the method

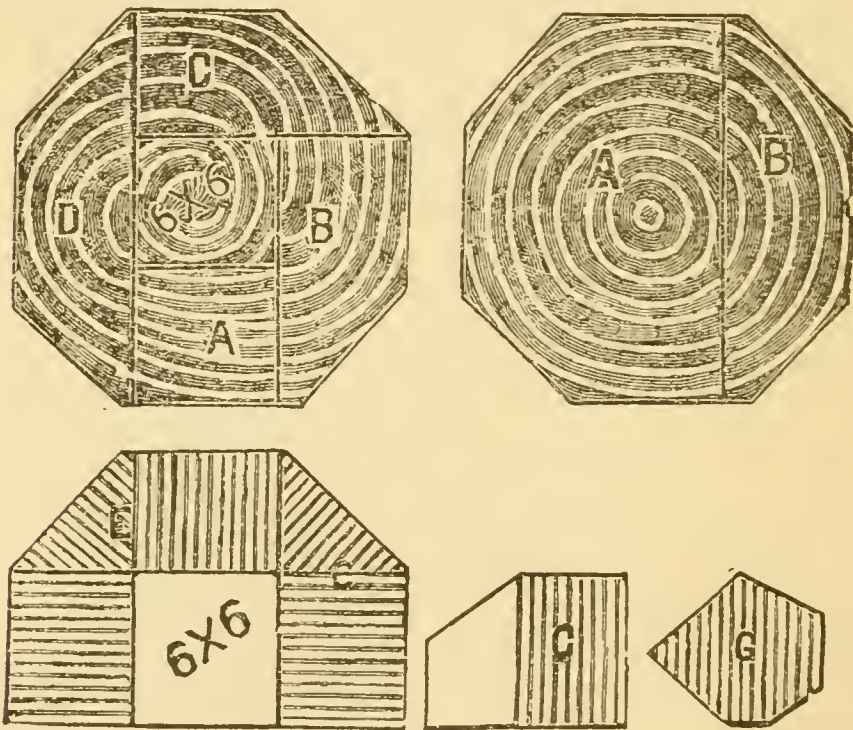


M. C. ADAMS METHOD.

we have used for years, and with great advantage, and if of any benefit to you in your investigations, you are welcome to it.

1. Take octagon A (right hand at top), saw off B, three inches from center.
2. Turn A down flat and cut off C.
3. Turn A down again and cut off D.
4. Turn A back and cut off 6x6 of heart.
5. Turn A heart side down, and finish in boards.
6. Put C on blocks and cut boards as indicated.
7. Finish balance of C as indicated in G.
8. Cut E and B same as C.

All the sap boards are saved in making the octagon, and the heart is made into a 6x6. Use no log less than 26 inches in diameter at the small end.

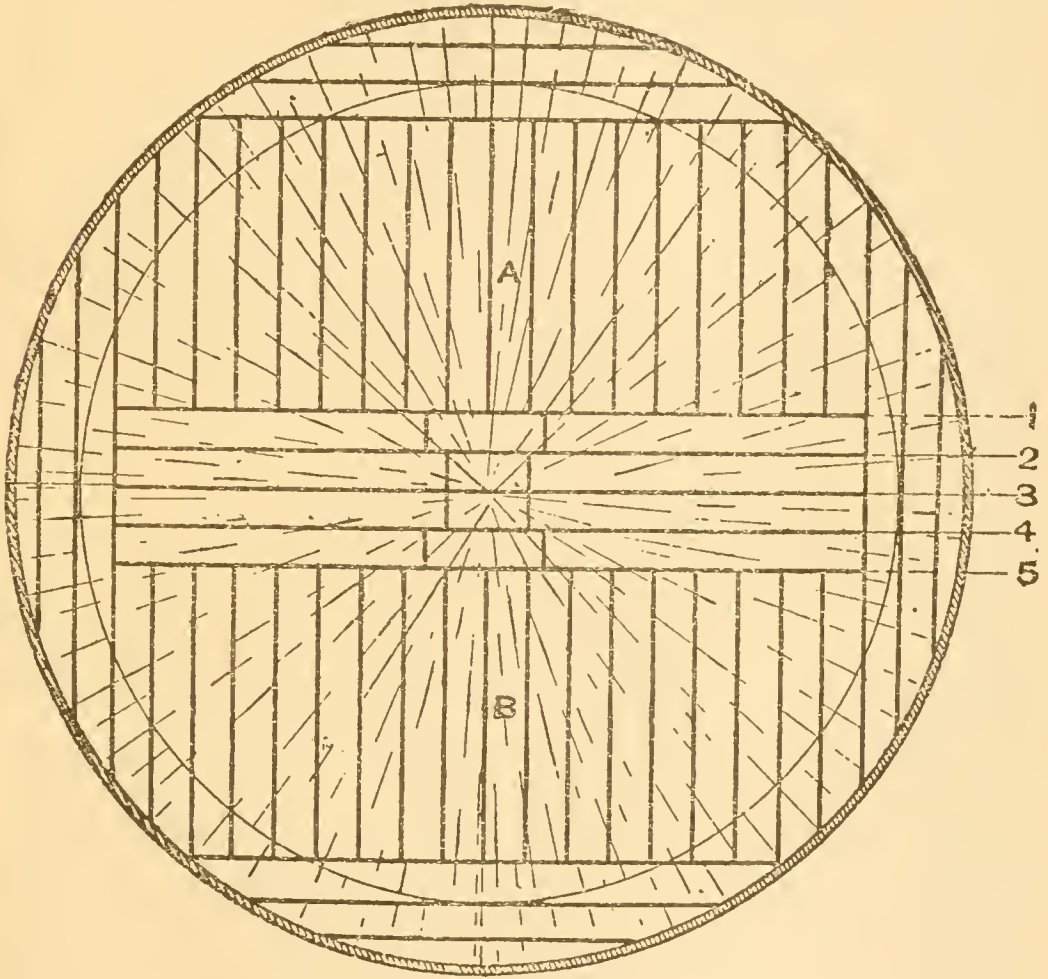


DICKSON'S METHOD.

July 9, 1887, our esteemed contemporary, the *Northwestern Lumberman*, contained the following communication upon an important branch of this subject, which by their courtesy, we are permitted to use in this connection.

DAYTON, O., July 2.—Please find inclosed a blue print of our plan of sawing edge grain flooring. It has been used four years,

with good success, both in Norway and in Southern pine. Our object in sending it to you is to ask you to publish it in your paper for the benefit of the lumbermen who are writing to us for it. We supposed by this time that all had got hold of the plan, but to-day we have had applications for about twenty, so we thought it would be an advantage to lumbermen generally to have this little diagram illustrated.



PLAN FOR SAWING EDGE GRAIN FLOORING.

First square log. 8 inch face heart. Then saw lines, 1, 2, 3, 4, and 5, after which rip up cants A and B together. Scale, 1½ inch to 1 foot.

This plan is practically adapted to a gang mill. by taking out some of the saws in canting, and then running the cants through the full gang. In fact, any mill devoted to flooring could make it to good

advantage by using two gangs, the one with part of the saws left out to cant the logs, and the other with all the saws in to finish up the cants. The margin is supposed to represent the sap on Southern pine.

BARNEY & SMITH MFG. Co.

"Grained" sawing is included in the diagrams and notes presented by Mr. Green, of Bellefontaine, Ohio, and will not be confounded with quarter sawing. In this it will be seen that the object is to saw all *around* the log in order to bring out the beautiful grain which can be produced only by *bastard* sawing. Grained lumber is unfit for floors or wearing surfaces, because it parallels the circles of growth, which have a tendency to separate the one from the other. Quarter sawing is produced by cutting the medullary rays at right angles with the circles of growth, leaving the edges of the rays disintegrated, so to speak, upon the surface, and these being the hardest or "horny" portion of the wood growth, not only remain solid under frictional wear, but present a beautiful mottled appearance highly prized in finished wood.

READY RECKONER.

SCANTLING, JOIST, AND TIMBER.

	12	14	16	18	20	22	24	26	28	30
2X 4	8	9	11	12	13	15	16	17	19	20
2X 6	12	14	16	18	20	22	24	26	28	30
2X 8	16	19	21	24	27	29	32	35	37	40
2X10	20	23	27	30	33	37	40	43	47	50
2X12	24	28	32	36	40	44	48	52	56	60
3X10	30	35	40	45	50	55	60	65	70	75
3X12	36	42	48	54	60	66	72	78	84	90
4X 4	16	19	21	24	27	29	32	35	37	40
4X 6	24	28	32	36	40	44	48	52	56	60
6X 6	36	42	48	54	60	66	72	78	84	90
6X 8	48	56	64	72	80	88	96	104	112	120
8X 8	64	75	85	96	107	117	128	139	149	160
8X10	80	93	107	120	133	147	160	173	187	200
10X10	100	117	133	150	167	183	200	217	233	250
10X12	120	140	160	180	200	220	240	260	280	300
12X12	144	168	192	216	240	264	288	312	336	360

SUPPLEMENT.

YELLOW PINE.

RULES FOR GRADING, CLASSIFICATION AND GAUGES, AS ADOPTED BY THE SOUTHWESTERN LUMBER ASSOCIATION IN CONVENTION AT TEXARKANA, FEBRUARY 27 AND 28, 1888.

FLOORING.—*First and second clear* flooring to be well manufactured, to be free of knots and other defects. Bright sap is admissible.

Star admits of three sound knots of $\frac{1}{2}$ inch in diameter, or of one of 1 inch, or of slight sap stains, but not more than three defects to be in any one piece.

No. 1 Common admits of sap stains and sound knots. No board will be admitted in this grade which will not lay without waste.

No. 2 Common admits of more defects, but no board shall be included in this grade which will not lay with a waste of one-quarter of the piece.

Rift sawed flooring admits not to exceed three sound knots not over $\frac{1}{2}$ inch in diameter, and the angle of the grain must not exceed 45 degrees.

BOARDS.—*First and second clear* finishing and step plank shall not be less than 8 inches wide, and up to 10 inches be free of all defects. Width over 10 inches and up to 12 inches may have one sound knot $\frac{3}{4}$ of an inch in diameter, or knots equal to this on one face. Over 12 to 14 inches may have two such knots, and three such knots over 14 inches. Bright sap is admissible. The above specifications shall apply to the face side of the board.

Star Finish shall not be less than 8 inches in width and shall admit of sap stains and of three sound knots equivalent to 3 inches in diameter, and on face side.

First Common admits of sound knots without regard to size or number, but shall be free from wane or splits that would materially injure the board.

No. 2 Common consists of lumber not as good as first common, but admits of no board that cannot be used with a waste of one-fourth.

FENCING.—*No. 1 Common* fencing shall be well manufactured and 4 and 6 inches wide and admits of sound knots that do not materially impair the strength of the piece.

No. 2 Fencing consists of lumber not as good as first common, that can be used without a waste of more than one-quarter.

DIMENSIONS.—Piece stuff and small timbers shall be well manufactured with not less than three square edges, free of unsound knots; seasoning checks and shakes admissible to one-eighth the length of the piece. Timbers of 10x10 and over may have a 2-inch wane on one corner or its equivalent if on two or more corners, one-fourth of the length of the piece.

SIZES.—The standard thickness of inch flooring shall be 13-16 inch; of 1¼ inch flooring shall be 1 1-16 inch; of 5⁄8 ceiling 9-16; of ½ ceiling, 7-16; of 3⁄8 ceiling, 5-16.

The standard width of 4 inch shall be 3½ inch face; of 6 inch, 5½ inch. Sized dimension shall be worked 3⁄8 inch off thickness and edge of 2x4; 2x6 and over to be worked 3⁄8 inch off thickness and ½ inch off edge; 4x4 and 4x6, one side and one edge, 3⁄8 off; 4x4 and 4x6, four sides ½ inch off.

Inch boards are finished surfaced one or two sides to 13-16; 1¼ inch boards surfaced one or two sides, 1 1-16 inch; 1½ inch boards surfaced one or two sides, 1 5 16 inch.

WEIGHT.—

	POUNDS.
Flooring 13-16 inch, }	
“ 1 1-16 “ }	2,300
“ 1 5-16 “ }	
Ceiling, 3⁄8 inch.....	1,000
“ ½ “	1,300
“ 5⁄8 “	1,600
“ 3⁄4 “	2,000
Rev. Siding from inch stock.	1,000
“ “ 1¼ inch stock	1,500
Drop siding 13-16x6 “	2,300
Moulded Casings and Base.....	2,300
Finishing	2,800
Common Boards and Fencing, S 1 or 2 S.....	2,800
“ “ Rough.....	3,200
2x4, 2x6, 2x8, S 1 S and 1 E.....	2,500
“ “ “ Rough.....	3,200
2x10 and 2x12, S 1 S and 1 E.....	2,800
“ “ “ Rough.....	3,400
4x4 and 4x6, S 1 S and 1 E.....	3,000
“ “ “ Rough.....	3,800
6x6, 6x8 and 8x8 S 1 S and 1 E.....	3,600
“ “ “ Rough.....	4,000
8x10 and over “	4,000

GAUGES.—In the standard thickness of 13-16 flooring, the groove shall be located 7-32 from the bottom, the opening to be 9-32, leaving 5-16 above the groove to face of the board. The tongue shall be located 7-32 from the bottom, be 4-16 thick, leaving a shoulder 11-32 above the tongue.

Depth of groove $\frac{3}{8}$ inch, and length of tongue 5-16. In $1\frac{1}{8}$ inch, 1 inch, or $\frac{7}{8}$ inch flooring the tongue and groove shall be located the same distance from the bottom as in 13-16 inch.

$1\frac{1}{4}$ flooring shall be dressed to 1 1-16 inch instead of $1\frac{1}{8}$ inch.

The shiner matching is adopted for ceiling in regard to location of tongue and groove for $\frac{3}{8}$, $\frac{1}{2}$ and $\frac{5}{8}$ ceiling.

RULES FOR GRADING AND CLASSIFICATION, AS ADOPTED BY THE YELLOW PINE LUMBER ASSOCIATION, OF ALABAMA, GEORGIA, FLORIDA, AND MISSISSIPPI.

FIRST AND SECOND CLEAR D. AND M. FLOORING

shall be clear of knots on dressed side, but may contain all bright well-worked sap; two or three small pin knots not over half of one inch in diameter on heart face will be allowed.

COMMON D. AND M. FLOORING

shall not contain any first and second clear, but may contain all sound knots, some splits, but no blue or loose knots.

STANDARD D. AND M. FLOORING

shall be fifty per cent. of first and second clear and fifty per cent. of common.

STEP STUFF

shall be free from knots on best side; may have two inches bright sap on edge and kiln splits not over twelve (12) inches long at ends.

STANDARD BOARDS

shall be run of logs, but no loose knots or blue sap.

FIRST AND SECOND ROUGH BOARDS

shall contain no knots on best side, and may contain all bright sap. No shakes will be allowed. Kiln splits not over twelve inches will be allowed.

THE RULES OF INSPECTION OF SOUTHERN POPLAR
MANUFACTURERS' AND DEALERS' ASSOCIATION,
ORGANIZED AT CINCINNATI, MAY 14, 1888.

In poplar lumber inspection rules the inspector is instructed to use his best judgment, based upon the general rules laid down for his guidance. He must inspect all boards and plank on the poorest side. The standard knot is to be considered as not exceeding 1 1-4 inches in diameter, and of a sound character. Splits are always a greater or less damage to poplar lumber, and will reduce a piece to one grade lower if the split is over 12 inches in length in boards and plank, or 6 inches in strips, but splits must be straight and in one end only to be allowed. All lumber must be sawed so that it will be of the standard thicknesses when seasoned. All lumber must be sawed square edged, unless otherwise ordered, and boards and planks having bark and wane must be reduced one grade and measured inside wane or bark. All boards 1 inch and under thick shall be measured face measure; if sawed scant it must be placed in next thickness below. All badly mis-sawed lumber shall be classed as culls. No cull is considered as having a marketable value which will not work one-half its size without waste. The lumber sawed for specific purposes must be inspected with a view to the adaptability of the piece for the intended use, as in many cases it cannot be utilized for the purpose. In the inspection of combined grade of firsts and seconds, 60 per cent. shall be firsts, and may contain 40 per cent. seconds. Standard lengths are always recognized as being 12, 14 and 16 feet, but 10 per cent. of 10 foot lengths may be allowed. Shorter than 10 foot does not come within the range of marketable, although sometimes admitted. Squares. The sizes shall be 4x4, 5x5, 6x6, 7x7, 8x8, 9x9 and 10x10. Worm holes are to be considered as one of the most serious defects in poplar lumber.

FIRST CLEAR—1 TO 2 INCHES IN THICKNESS.

Shall be 8 inches and upward wide, and absolutely clear up to 10 inches in width. At 11 inches 1 inch of bright sap will be allowed. At 12, 13, 14 and 15 inches wide 2 inches of bright sap will be allowed, or 1 standard knot. At 16 inches and over in width, 3 inches of bright sap on one edge will be allowed, or 2 standard knots.

SECOND CLEAR—I TO 2 INCHES IN THICKNESS.

Shall be 8 inches and upward in width, and at 8 and 9 inches wide will admit of 1 inch of bright sap, but no other defects. At 10, 11 and 12 inches wide will admit of 2 inches of bright sap and 1 standard knot. At 13, 14 and 15 inches wide will admit of 3 inches of bright sap and 1 standard knot, or 2 standard knots if there is no sap. At 16 inches and over will admit of 5 inches of bright sap and 1 standard knot; if there is no sap then 3 standard knots will be admitted.

$2\frac{1}{2}$, 3 and 4 inches, first and second, shall be 10 inches and over wide; $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$ and $\frac{3}{4}$, first and second clear, shall be 10 inches and over wide, and contain not less than 75 per cent. firsts.

SQUARES.

Shall be of the combined grades of first and second clear; 4x4's must be clear of all defects excepting $\frac{1}{2}$ inch of sap on the face side; 5x5 and 6x6 will admit of 2 inches of bright sap on one face; 7x7, 8x8 and 10x10 will admit of 3 inches of bright sap on one face.

Squares must be free of hearts and unsound knots.

SAP CLEAR.

Shall be sound but not black, and 6 inches and over in width, and free of all defects.

COMMON.

Shall include any width not less than 6 inches, and will allow of bright or discolored sap and knots beyond those described in second clear. Two unsound standard knots will be allowed in this grade, if over 12 inches wide; and straight splits shall not be considered a defect; otherwise lumber must be sound.

CULL.

Shall include all grades not up to the standard of common, and must be available one-half of its size without waste.

POPLAR STRIPS.

Shall be 4 and 6 inches wide and known as clear, second clear and common. Clear shall be free of all defects. Second clear may have bright sap, but free of other defects. Common may contain from 1 to 4 standard knots, and a slight amount of discolored sap.

GRADES OF MANUFACTURED LUMBER.

Beveled Siding—Worked to $5\frac{3}{8}$ inches wide.

Firsts and Seconds—1 inch sap or 1 small knot admitted on thin edge, but no other defect; selects—sound sap is no defect; common—may contain not to exceed 3 standard knots or pin holes, sap no defect.

Ceiling and patent siding—Firsts and seconds; one clear yellow face; selects—sound sap is no defect; common—not to exceed 3 standard knots.

Casing and base—Same as ceiling.

Flooring—To be worked $3\frac{1}{4}$ and $5\frac{1}{4}$ inches wide; firsts and seconds, one clear yellow face; selects—sound sap is no defect; common—4 or more standard knots, sap is no defect.

Mouldings—Sap is no defect.

All worked material to be sold count measure.

A resolution was adopted to avoid having the Association classification interfere with the local market of any member, and afterward another resolution was adopted defining such local trade as that which could be reached by team delivery from the point of location.

The standard weight agreed upon for dry inch poplar lumber, in the rough, was 2,800 pounds.

Nashville was made the point of distribution to which all prices applied, and the basis for adjusting freight rates.

The committee's report on dressed lumber was accepted, and weights on the same were adopted, as follows, to the thousand feet:

Bevel siding.....	900 pounds.
Ceiling, $\frac{3}{8}$	800 “
“ $\frac{1}{2}$	1,250 “
“ $\frac{5}{8}$	1,500 “
“ $\frac{7}{8}$	2,000 “
One-inch lumber and over, board measure.....	2,250 “

EFFECT OF SAP.

Sap in all woods is a serious defect when it has become sour and discolored, and the defect magnifies under the manipulation of an inspector, beyond what it would do in the hands of one who by immediate use can check the tendency to decay. When oak or any other wood has lain too long in a pile, incipient decay begins, and if it is now moved and placed in yard stock, where it may lie an indefinite time before going into actual use, the chances are that the

stained spots will show up so soft with decay, as to render them unfit for the purpose originally intended. This is particularly the case with maple, which has been stacked solid when green, or but partially seasoned; blue spots will appear on the surface, which in a few weeks may be lifted out with the point of a knife, leaving a pock-marked surface, which the ordinary shaving will not remove. It is apparently, to the casual observer, but a trifling thing, doing no damage to the board, but the experienced handler will appreciate the fact that the decay which has thus begun, is a cancer which threatens the durability of the piece. As to the extent of damage, each piece of lumber is subject to individual conditions, which can only be determined by examination. We can only add generally: If sap *dries* bright it is not in this market considered a defect; if it is discolored, it is an injury to the extent of its depth and breadth, of which only a competent inspector is a proper judge. Wood stain, not arising from sap, but by one board lying on top of another is a damage, whose extent must be determined by the condition of each piece. If it has lain long enough, it will be in much the same condition as a board which has lain upon the ground for some months, and the spots but indicate the places where the incipient decay has made the most progress.

RE-MEASURING CARGOES.

It is an unwritten law, but one which has been in vogue upon the lakes for the past forty years, that a vessel being entitled to freight on all she carries, in case of dissatisfaction and re-tally, the party in error must pay the bill. A slight difference would not entitle the vessel to put the consignee to the expense of re-measuring, but a difference sufficient to raise a presumption of fraud on the part of the shipper in billing below actual quantities, would entitle the vessel to demand not only the extra freight but the expense of correcting the error or fraud. When cargo-lumber is measured in Chicago, a variation of one per cent. is allowed between shipper's tally and Chicago tally; if the difference is more than one per cent., a third tally is ruleable, the expense of which falls upon the party in error, and we have known the attendant expense to reach as high as \$400 in one case, and it was paid by the chief or employing inspector without a grumble, when the fact of error was at last established, and the

responsibility placed. It is a safe proposition in law and in custom that a man who makes an error or commits a fraud, shall make the losses of innocent parties good in the matter.

SNIDE SHINGLES.

It is unfortunate that a sentiment prevails in some localities not only in the South but in the North, that "Chicago don't care whether the shingles are good or bad, if they are only in the shape of shingles." We must confess that Chicago dealers in the past have done much to cultivate the sentiment, by ignoring their own established rules of inspection, and permitting manufacturers to ship rag tag and bob tail, and paying about the same price in many cases as for clear shingles. Chicago's *A* is in many cases, if not a majority, a delusion and a cheat, and those who deal in some brands are beginning to be looked at in the same light as was the "shingle weaver" of the East 30 years ago, "a poor coot." Some of them however *do* know the difference between an honest shingle and a bunch of edgings, and it is getting to be a dangerous experiment to ship cull stock to this market. After a few shipments that do not pay the freight, our Southern friends will learn that if they desire to build and hold a market in the North, they must keep their knots, pecks, sap, rot, split and thin shingles for home consumption, and must be able to guarantee that every bunch contains only perfect shingles—16 inches long, 5 to 2 inches at the butt, uniform in thickness, the points solid and uniform (not feathered) and 1-32 thick, bunches full count and packed solid. They must average good width, and nothing under 3 inches wide should go in the bunch, and very few of them. The band must be strong and the bunch well pressed. If these conditions are observed, cypress shingles have a mission in the North, but for every bunch that does not reach these requirements, the sale of a car-load is lost.

MEASURING "MERCHANTABLE."

"When lumber is sold in this market to be measured merchantable (sometimes erroneously called 'workable') the inspector must measure full, except in culls, which are to be measured at one-half." (See Hardwood Rules.)

The inspection of oak under the rule is in grades of Clear, Second Clear, Common and Culls. If a buyer purchases merchantable, he

is supposed to get a full mixed log run, not all clear, second clear or common, but a fair proportion of each, and the price is fixed accordingly. • If the defects in each piece are to be measured out, the measurement remains simply a clear. If this is agreed upon, the price should correspond. All that a buyer of "merchantable" *can claim* is that he be given the full run of the log at full measurement, culls measured at one-half. The rules say: "*Mill culls are never recognized as merchantable, and all culls which will not work to the use for which the timber or the size is applicable, without wasting more than one-half, are mill culls of no recognized value.*"

We are aware that certain buyers and certain so-called inspectors, claim to measure out *all* defects in measuring merchantable, and if a specific bargain between buyer and seller calls for that construction, it is all right ; but when the contract simply calls for "merchantable" measure, it is no more nor less than robbery, downright stealing. It is to be regretted that there is a *wilful* ignorance exhibited by many hardwood inspectors, (so called), not only in Chicago, but in nearly all hardwood markets, in that they ignore the printed rules and follow rules, whims, and caprices, which have no recognition outside their own dishonest craniums. It is equally to be regretted that in nearly all the markets there are to be found dishonest merchants, men who stand well in the communities in which they dwell, men who would scorn to pick a pocket or do an openly dishonest act, who are willing to reap the benefit of the dishonesty of a so-called inspector, in robbing a manufacturer out of one-half the value of a carload of lumber, and ease their consciences by throwing the responsibility on to the shoulders of the inspector, well knowing that if he would not steal for them he would not get their work. There are such men in New York, Boston, Philadelphia, and all the rest of the big hardwood markets, not excepting Chicago.

TEACHING A NOVICE.

[From Lumber Trade Journal, March 1, 1888.]

JANESVILLE, ALA., Feb. 18, 1888.

EDITOR JOURNAL:

Will you kindly advise me if I can get any book giving instructions by which a novice may acquire proficiency in estimating stumpage, or number of feet per acre of standing timber. What is the best and cheapest work, and where can it be had?

* * * *

We do not know of any such book outside of a good lumber journal (modesty prevents our saying "LUMBER TRADE JOURNAL.") Aside from these, a book about 5 feet 6 high, weighing from 150 to 175 pounds avoirdupois, capable of swallowing about four pounds of salt pork per day, and rivaling the pedestrians who recently walked 100 miles a day in New York, in point of endurance; a book written upon the brain of a man who has made his home in the wild woods, is the only work of any reliability of which we have knowledge. Our advice would be: 1st. Get such a book (?) 2d. Go yourself. 3d. Send a boy. If you adopt the second or third proposition, you will first need an outfit. This is not to be found in the parlor of a \$4 a day hotel; nor by smoking 25 cent cigars. Get a pair of army blankets and a packing strap, a frying pan and a tin pail, a big chunk of salt pork or bacon, a few quarts of beans and a bag of flour, (some land lookers carry their flour in a bottle, claiming superior virtue in the extract). Don't forget a plug of black tobacco and a briar-wood pipe. An axe and a rifle come handy. If you are a novice with an axe, don't take a double barreled (beg pardon, double bitted) one, lest when you come to use it, you find it making more havoc on your leg than in a tree.

Thus provided, with a folding rule, a log book and a memorandum book in your pocket, you start for the forest. You strap the goods, made up in a pack weighing 75 to 100 pounds, upon your shoulders. If you have no suitable packing strap, take off your drawers and pass the legs through the ropes and over your shoulders; it makes a good substitute. Thus equipped, you are ready for an exploring trip. Calfskin boots and morocco slippers are not recommended for woods wear, and kid gloves are out of place. First, find a section corner to make sure you are on the right land. Look the ground over for a while, pick out an *average* spot of timber, pace off 72 paces square, and cut down an *average* size tree. If you don't manage to lodge it in another, and it don't kick back and knock you down, measure it off into 16 foot lengths, and by your log tables (if you have none we can supply you for 35 cents), find out how many feet there are in it. Count the trees on the acre, and you can figure out how many feet they will probably scale. If there are punk knots in sight, or any other defects which will make the lumber cost more than it will sell for, it is not advisable to count the tree. By the

time you have tramped over 40 acres, your "novice" will probably enjoy his pork and no less his "dudeen." When the shades of night fall about him, he will be a fit subject for gathering up a handful of pine spines for a feather bed, and after hunting up a soft rock or a pine log for a pillow, say his prayers and enjoy the sleep of the just. We would not care to buy stumpage on the estimate of a novice from the results of one day's experience, but if he sticks to it long enough, he in the course of a few years would be likely to become an adept if he has the stuff in him that land lookers are made of. There is another way in which estimating is often done, borrowed from methods often adopted by United States surveyors, but it has its drawbacks, and these sometimes culminate in drawback toward the penitentiary, and is therefor not to be recommended to "novices." By this method, a pleasant room well lighted, a large table and plenty of writing material are requisite. A large map of the territory, to be estimated or surveyed, is spread out, and the lines laid out dividing it from other lands, then it is the easiest thing in the world to mark off section lines, which can never be found, and to estimate quantities of timber which never existed. There has been too much of such surveying and estimating, and the outcome has never been satisfactory. Concisely to answer our correspondent's question. Timber estimators are born rather than educated, and must learn from experience rather than from books.

—THE—
LUMBER TRADE JOURNAL

W. C. WRIGHT, Business M'gr.

GEO. W. HOTCHKISS, Editor.

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